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GENERAL INFORMATION:

APPLICANT: Nichols, Scott E.

TITLE OF INVENTION: Substitutes for Modified Starches and TITLE OF INVENTION: Latexes in Paper Manufacture FILE REFERENCE: 0357CR

CURRENT APPLICATION NUMBER: US/09/210,361

CURRENT FILING DATE: 1998-12-11

EARLIER APPLICATION NUMBER: 09/007,999

BEARLIER FILING DATE: 1998-01-16

EARLIER FILING DATE: 1995-06-07

EARLIER APPLICATION NUMBER: 09/09/620

EARLIER FILING DATE: 1995-06-07

EARLIER FILING DATE: 1998-01-20

EARLIER FILING DATE: 1998-01-20

EARLIER FILING DATE: 1998-06-07

APPLICATION NUMBER: 08/ FILING DATE: 1995-06-07 APPLICATION NUMBER: 09/

09/008,172

RESULT 2 US-09-210-361-2

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Sequence 2, Application US/09210361 Patent No. 6284479

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                                                                                                                                                                                                                RESULT 4
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SEQ ID NO 2
LENGTH: 1475
TYPE: PRT
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EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 2
LENGTH: 1475
GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
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                                                                                                                                                      Sequence 4, Application US/09210361 Patent No. 6284479
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Best Local Similarity
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Best Local
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PRIOR APPLICATION NUMBER: 08/4
PRIOR APPLICATION NUMBER: 08/4
PRIOR APPLICATION NUMBER: 08/4
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR APPLICATION NUMBER: 09/007,999
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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FILING DATE: 1995-06-07
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER:
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21; Conserv
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Pred. No. 1e-10;
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RESULT 5
US-09-740-274-4
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PRIOR APPLICATION NUMBER: 08/47
PRIOR FILING DATE: 1995-06-07
PRIOR REPLICATION NUMBER: 09/00:
PRIOR REPLICATION NUMBER: 09/00:
PRIOR APPLICATION NUMBER: 08/48
PRIOR APPLICATION NUMBER: 08/48
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/00
PRIOR PRIOR PRIOR NATE: 1998-01-16
PRIOR PILING DATE: 1995-06-07
PRIOR PILING DATE: 1995-06-07
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LENGTH: 1375
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Best Local :
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EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
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EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
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SOFTWARE: FastSEQ for Windows Version 3.0
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PRIOR FILING DATE: 1998-12-
PRIOR APPLICATION NUMBER: 0
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
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TYPE: PRT
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ANDHLSILEAWSYNDTPYLHD 527
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95.2%; Pred. No. 2
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RESULT 6 US-09-604-957-4 ; Sequence 4, Application US/09604957 ; Patent No. 6486314

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GENERAL INFORMATION:
APPLICANT: NICHOLS, Scott E.
FITLE OF INVENTION: Substitutes for Modified Starches and
FITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 09/478,704
EARLIER APPLICATION NUMBER: 09/478,704
EARLIER FILING DATE: 1995-06-07
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SEQ ID NO 2
LENGTH: 1430
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APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-TAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
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Best Local S
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LENGTH: 545
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CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin Ver. 2.1
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Similarity 71.4%;
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Pred. No. 0.00043;
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US-09-740-274-6
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Best Local S
Matches 15
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NUMBER OF SEQ ID NOS: 6
SOFTWARE: FASTSEQ for Windows Version
SEQ ID NO 6
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Patent No. 6465203
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Best Local Similarity
Matches 15; Conserv
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EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172
EARLIER APPLICATION NUMBER: 08/482,711
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
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NUMBER OF SEQ ID NOS:
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PRIOR FILING DATE: 1995-06-07
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PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 1995-(
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                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
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495 AINHLSILEAWSDNDPQYNKD 519
                                                               15;
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                               1 ANDHUSILEAWSDNDTPYLHD 21
                                                                               Similarity
                                                                                                                                                                                                           FastSEQ for Windows Version
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                                                               Conservative
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71.4%;
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Pred. No. 0.0014;
                                                                             Score 75; DB 4;
Pred. No. 0.0014;
                                                               Mismatches
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                                                                                              Length 1430;
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; Sequence 5, Application US/09604957
; Patent No. 6486314

GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT

RESULT 10 US-09-604-957-5

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RESULT 11
US-08-793-824-2
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                                                                   US-08-793-824-2
Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 5
LENGTH: 523
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                Query Match
Best Local (
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PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388 CURRENT APPLICATION NUMBER: US/09/604,957 CURRENT FILING DATE: 2000-06-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                                                                                                                                                                        TELEFAX: 61 2 957 6288
TELEX: 26547
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                    TOPOLOGY: not MOLECULE TYPE: ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Giffard, Philip Morrison
APPLICANT: Jacques, Nicholas Anthony
TITLE OF INVENTION: Genetic Manipulation of Plants to
TITLE OF INVENTION: Increase Stored Carbohydrates
NUMBER OF SEQUENCES: 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                             TELECOMMUNICATION INFORMATION: TELEPHONE: 61 2 9957 5944
                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADDRESSEE: Griffith Hack & Co
STREET: Level 8, 168 Walker Street
CITY: No. 5981838th Sydney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
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                                                                                   ORGANISM:
                                                                                                                                                        STRANDEDNESS
                                                                                                                                                                       TYPE: amino acid
                                                                                                                                                                                                                                                           TELEPHONE: 61 2 9957 5
TELEFAX: 61 2 957 6288
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                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION: 800
                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER:
                                                                                                                                                                                       ENGTH:
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Similarity 66.7%;
14; Conservative
                  Similarity
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LEER, ROBERT-JAN
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 Conservative
                                                                                                                                  not relevant
                                                                                   Streptococcus salivarius
                                                                                                                  protein
                52.9%;
72.2%;
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Pred. No.
                  Score 63; DB 2
Pred. No. 0.14;
   Mismatches
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                                  Length 1577;
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; TYPE: PRT
; ORGANISM: Leuconostoc mesenteroides
US-09-604-957-6
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US-09-604-957-6
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                                                                                                                                           US-09-499-203-2
                                                                   Query Match
Best Local Sim
Matches 11;
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SEQ ID NO 2
LENGTH: 2057
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                             APPLICANT: KOSSMANN, Jens
APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules Encoding Alternansucrase
FILE REFERENCE: 147-1969
FILE REFERENCE: 147-1969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/499,203
CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUJ, HAKUM
APPLICANT: LEER, ROBERT-JAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                          TYPE: PRT ORGANISM: Leuconostoc mesenteroides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
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665
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                                                                                     Similarity
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ANKHLSILEDWNGKDPQYVN 684
                                   ANDHISILEAWSDNDTPYLH 20
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                                                                                     50.4%;
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                                                                   Score 60; DB 4;
Pred. No. 0.57;
3; Mismatches
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Pred. No. 0.13;
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                                                                                                        Length 2057;
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RESULT 14
US-09-604-957-7
; Sequence 7, Application US/09604957
; Patent No. 6486314
; GENERAL INFORMATION:

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GENERAL INC. GROWATION:

GENERAL INCOMMATION:

APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA

APPLICANT: DIJKHUIZEN, LUBBERT

APPLICANT: LIER, ROBERT-JAN

TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN

FILE REFERENCE: BO 43388

CURRENT APPLICATION NUMBER: US/09/604,957

CURRENT FILING DATE: 2000-06-28

PRIOR APPLICATION NUMBER: 00201871.1

PRIOR FILING DATE: 2000-05-25

NUMBER OF SEQ ID NOS: 17

SEQ ID NO 3

SEQ ID NO 3

LENGTH: 1278

TYPE: PRT

ORGANISM: Lactobacillus reuteri

US-09-604-957-3
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US-09-604-957-3
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Search completed: November 13, 2003, 09:47:57 Job time: 15.6351 secs
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: E0 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 7
LENGTH: 535
TYPE: 185
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Best Local Similarity 40.0%; Pred. No. 7;
Matches 8; Conservative 5; Mismatche
                                                                                                                                                                     Query Match 41.2%;
Best Local Similarity 40.0%;
Matches 8; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUJ, HAKU
APPLICANT: LEER, ROBERT-JAN
                                                                                  550 SNKHINILEDWNHADPEYFN 569
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                                                                                                                             1 ANDHISILEAWSDNDTPYLH 20
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Pred. No. 20;
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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
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Maximum DB
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seq length: 2000000000
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119
1 ANDHLSILEAWSDNI
                  1107863 seqs, 158726573 residues
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1: /SIDS1/gcgdata/g
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| SIDS1/gcgdata/geneseq/geneseqp-embl/AA1980.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-embl/AA1982.DAT:*
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| SIDS1/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-embl/AA2000.DAT:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

	7 119 1							Result Q
	100.0							Query Match Length DB
1475	1475	1475	1475			1475	1017	ength D
23 6	223	23	23	23	23	23	23	ı
AAU98036	AAU98034	AAU98033	AAU98032	AAU98031	AAU98030	AAU98027	AAU79285	ID
	s. mutans glucosyl		s. mutans glucosyl	S. mutans glucosyl	S. mutans glucosyl	S. mutans glucosyl	cus m	Description

Anti-caries agent composed of a monoclonal antibody against an inhibitory enzyme against water insoluble glucan synthetase of glucosyl transferase-B (GTF-B) of Streptococcus mutans

WPI; 2002-448101/48.

Claim 4; Page 17-19; 28pp; Japanese

45	44	43	42	41	40	39	38	37	36	3 5	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10
47	47	47.5	48	48.5	49	49	49	49	50	50	50	51	53	53	59	60	60	63	99	69	71	75	75	75	75	75	75	108	110	110	119	119	119	119	119
9	39.5						41.2	•		-						•	50.4	•	•	•	•		٠	63.0	•	٠	•		,	٠		0	0		100.0
338	195	w	855	401	1781	302	12	12	649	339	305	486	12	12	12	2057	12	1577	12	2835	1527	1430	1430	1430	1430	1430	1430	1592	1375	1375	1476	1475	1475	1475	1475
15	21	21	23	22	23	22	23	23	22	21	21	22	23	23	23	21	23	17	23	23	23	23	23	23	23	23	23	14	23	23	23	23	23	23	23
AAR65965	AAG09941	AAY67414	ABB98573	AAM43544	AAU74519	AAU38411	ABB98648	ABB98578	AAU62860	AAG09844	84	AAB36552	ABB98646	ABB98644	ABB98643	AAB10667	ABB98642	AAR91047	ABB98641	ABB98574	005	AAU98045	AAU98044	AAU98043	804	AAU98041	802	AAR32925	AAU79288	802	10	804	803	80	AAU98037
T. niveum GAPDH.	is thali	13	Dextran saccharase	Human polypeptide	Lactobacillus reut	_tyr	Dextrane-saccharas	Dextrane saccharas	Propionibacterium	Arabidopsis thalia		tracel		Dextrane-saccharas	Dextrane-saccharas	L. mesenteroides a	Dextrane-saccharas	Alpha-D-glucosyltr	Dextrane-saccharas	Dextran saccharase	Leuconostoc mesent	ω	S. mutans glucosyl	S. mutans glucosyl	 mutans glucosyl 		S. mutans glucosyl	Glucosyltransferea	Streptococcus muta	•	41	. mutans	. mutans gluc	S. mutans GTFB mut	S. mutans glucosyl

ALIGNMENTS

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AAUT912 1
AAUT92 1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Antibody; dental caries; water insoluble glucan synthetase; anti-caries; glucosyl transferase-B; immunotherapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus mutans monoclonal antibody-related protein #2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13-AUG-2002
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Matches
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17565) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S. mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27-AUG-2002
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                                                                                                                                                                                                                                                              Glucosyltransferase B or D protein useful for producing a glucan uses substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11-DEC-1998;
07-JUN-1995;
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                                The invention an isolated protein comprising a glucosyltrans (GTF) B polypeptide having changes at position from I448V, I D567T, K1014T, D457N/D571K, D567T/D571K, D567T/D571K/K1014T, I448V/D457N/D57TF/D571K/K779Q/K1014T, D567T/D571K/K1014T, I448V/D457N/D57TF/D571K/K779Q/K1014T, Y169A/Y17DA, Y17DA, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, Changes at positions from T589D, T589E, N471D, N47
                                                                                                                                                                                                                                                                                                                                                                            N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nichols SE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (NICH/) NICHOLS
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)B; ABK52938.
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                                                                                                                                                                                                                   Page
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95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                   44pp;
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        are a glucan produced
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                                                                                                                                                                                                                     English
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                                                                                                                                         glucosyltransferase
from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
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             the
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                   mutant
                                           and
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RESULT 3
AAU98030
ID AAU9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cc an isolated polynucleotide which encodes Pl or P2, or its complementary complementary compression cassette comprising the polynucleotide operably linked to a comproser, a vector comprising the expression cassette, host cell controduced with the vector, a transgenic plant comprising the conting composition comprising a glucan produced in a plant transformed conting composition comprising a glucan produced in a plant transformed contribution is produced in the amyloplast and/or vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed comprising the mutant GTF, wild type or, starch, a latex, complexed in the amyloplast and/or vacuole or a maize line comprising the glucan in the amyloplast and/or vacuole or a maize line comprising the glucan in a plant transformed with a gene encoding a glucosyltransferase B or D enzyme, wild-type or mutant and a paper comprising the glucan in a plant. The method comprises transforming a glucian in a plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Comprise in paper manufactures for and additions to modified starch comprises in paper manufactures for and additions to modified starch comprises and impart gloss to the paper during coating step.

CC manufacture utilising the glucan produce dby GTF, which utilises the biologically produced input materials, is more cost-effective and comprises and impart gloss to the paper during coating step.

CC properties and impart gloss to the paper during coating step.
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Matches 21
11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                       S. mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU98030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAU98030 standard; Protein; 1475
                                                                                                                                                                                                                                                                                                 Streptococcus
                                                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                                                  Synthetic.
                                                                                                        19-DEC-2000;
                                                                                                                                         14-MAR-2002
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                                                                                                                                                                                                                                                                                                                                                                                                     glucosyltransferase GTFB mutant I448V
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                                                                                                          2000US-0740274
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 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
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                                                                                                                                                                                                             /note= "Wild-type Ile
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Pred. No. 5.4e-09;
, Mismatches 0;
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                                                                                                                                                                                                                                                                                                                                                             molecule;
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RESULT 4
AAU98031
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XX
AC AAU
XX
DT 27-
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Matches 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU980 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly upon the produced by GTF, which utilises are cost-effective.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The invention an isolated protein comprising a glucosyltrans (GTF) B polypeptide having changes at position from I448V, I D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, I D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, Changes At positions from T589D, T589E, N471D, N471D
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20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          paper manutacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPT; 2002-414332/44
       27-AUG-2002
                                                                             AAU98031;
                                                                                                                                                   AAU98031 standard; Protein; 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                          481
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
(first entry)
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98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 119; DB 23;
Pred. No. 5.4e-09;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                          501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               glucosyltransferase from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       but
as AAU98027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
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07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                          19-DEC-2000;
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                                                                                                                                                                                                                                                                        Misc-difference
                                                                                                                                                                                                                                                                                                                       Synthetic
                                                                                                                                                                                                                                                                                                                                    Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                  coating composition;
amyloplast; vacuole;
                                                                                                                           11-DEC-1998;
(NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                  mutans glucosyltransferase GTFB mutant D457N
                                                                                                                                                                                                                                                                                                                                                                  vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                          2000US-0740274
                               98US-0009620
                                              98US-0007999.
98US-0008172.
                                                                              95US-0485243
                                                                                           95US-0478704
95US-0482711
                                                                                                                            98US-0210361
                                                                                                                                                                                                                                                                       Location/Qualifiers
 ຜ
                                                                                                                                                                                                                                                      /note= "Wild-type Asp substituted by Asn"
                                                                                                                                                                                                                                                                                                                                                                                   glucan;
                                                                                                                                                                                                                                                                                                                                                                                                    GTFB;
                                                                                                                                                                                                                                                                                                                                                                                     transgenic plant; paper sizing;
n; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                   latex;
                                                                                                                                                                                                                                                                                                                                                                                      molecule;
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Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -

laim 36; Page -; 44pp; English.

The invention an isolated protein comprising a glucosyltransferase (GTP) B polypeptide having changes at position from I448V, D457N, D567T, D571K, E014T, D457N/D57TK, D567T/D571K, D667T/D57TK, D667T/D57TK, D667T/D57TK, E014T, I448V/D457N/D567T,D57TK, E014T, GC P567T/D57TK, E014T, I448V/D457N/D567T/D57TK, E014T, GC P567T/D57TK, E014T, I448V/D457N/D567T/D57TK, E014T, GC P567T/D57TK, E014T, I448V/D457N/D567T/D57TK, E014T, GC P567T/D57TK, E014T, GC P567T/D57TK, E014T, I448V/D457N/D567T/D57TK, E014T, GC P567T, E014T, I448V/D457N/D567T, E014T, E014T, I448V/D457N/D567T, E014T, I448V/D457N/D567T, E014T, E014T, I448V/D457N/D567T, E014T, E014T, I448V/D457N/D567T, I448V/D457N/D667T, I448V/D457N/D667T, I448V/D457N/D667T, I448V/D457N/D667T,

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Дb
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                                                                                                                                                                                                                                                                                            07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTPB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTPB sequence appearing as AAU9802 and the information in claim 36.
         The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, V1014T, D457N/D57T, S7TN/D57TK, D567T/D57TK, D567T/D57TK, D147T, T1448V/D457N/D567T/D57TK/K779Q/K1014T, T148V/D457N/D567T/D57TK/K779Q/K1014T, T169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having Changes at positions from T589D, T589E, N471D, T471D/T589D, and N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              coating composition;
amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase; GTFB; transgenic plant; paper sizing;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27-AUG-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAU98032 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
                                                                                                                                                                                                                                                                                                                                                                                                     19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Misc-difference
                                                                                                                                                                                                                  WPI; 2002-414332/44.
                                                                                                                                                                                                                                            Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                          US2002031826-A1
                                                                                                                                 Claim 36; Page -; 44pp; English.
                                                                                                                                                                                       Glucosyltransferase
                                                                                                                                                                                                                                                                    (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                            11-DEC-1998;
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                                                                                                                                                                           substitutes for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                          manufacture, comprises mutations in specific
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ىر
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               glucosyltransferase GTFB mutant D567T.
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larity 100.0%;
Conservative 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first
                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    mutans.
                                                                                                                                                                                                                                                                                            95US-0478704.
95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                            98US-0210361.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers 567
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note= "Wild-type Asp substituted by
                                                                                                                                                                         B or D protein useful for producing a glucan useful and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             glucan; starch; latex; thermoplastic molecule; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 119; DB 23;
Pred. No. 5.4e-09;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                             positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1475;
                    complementary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               but
as AAU98027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
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RESULT 6
AAU98033
ID AAU9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CC an expression cassette comprising the polynucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell coating the the tweetor, a transgenic plant comprising the coating composition comprising a plucan produced with the vector, a transgenic plant, a paper sizing and/or coating composition comprising a plucan produced in a plant transformed cC with a gene encoding the mutant GTF, wild type or, starch, a latex, the plucan is produced in the amyloplast and/or vacuole or a maize line cC deficient in starch biosynthesis, transformed with a gene encoding a glucanyltransferase B or D enzyme, wild-type or mutant and a paper comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a comprising the glucan (paper sizing/coating agent). The vector is useful comprising the produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the crepancy of the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the crepancy of the plant and inducing expression of the colorophyll AB binding protein to produce a transit sequence from the produced in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch and placen is produced in the amyloplast of potato or the vacuole of sugar beet. CC manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and centre sequence is not shown in the specification but thermoplastic corrected by the indexer using the GTFB sequence appearing as AAU98027 was created by the indexer using the GTFB sequence appearing as AAU98027
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 21
11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                        S. mutans glucosyltransferase GTFB mutant K1014T
                                                                                                                                                                                        Key Location/Qualifiers Misc-difference 1014
                                                                                                                                                                                                                                                                                                     amyloplast;
                                                                                                                                                                                                                                                                                                                         coating composition;
                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAU98033;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAU98033 standard; Protein; 1475
                                                                                                                                                                                                                                                                     Streptococcus
                                                                                                                                                                                                                                                  Synthetic.
                                                                   19-DEC-2000; 2000US-0740274
                                                                                                      14-MAR-2002
                                                                                                                                          US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%; llarity 100.0%; Conservative
                                                                                                                                                                                                                                                                                                       vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                     mutans
   98US-0210361.
95US-0478704.
95US-0482711.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A
                                                                                                                                                                             /note=
                                                                                                                                                                                                                                                                                                   GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic paper manufacture; mutant; mutein.
                                                                                                                                                                             "Wild-type Lys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 119; DB 23;
Pred. No. 5.4e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                               substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
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                                                                                                                                                                                                                                                                                                                               molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
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RESULT 7
AAU98034
ID AAU9
XX
AC AAU9
                                                                                                                                                                                                                                                                                                                  CC (GFT) B polypeptide having changes at position from 1448V, D457N, CC D567T, R1014T, D457N/D567T, D457N/D571K, CC D567T/D571K/K1014T, D457N/D57TK, D567T/D571K/K779A/K1014T, D457N/D57TK, D567T/D571K/K779A/K1014T, D457N/D57TK, D567T/D57TK/K779A/K1014T, CC D567T/D571K/K779Q or a GTF D Dolypetide having changes at positions from T595D, T595E, M471D, M471D/T599E, Also included are a glucan produced by the GTF mutant, an expression cassette comprising the polynucleotide operably linked to a nisolated polynucleotide which encodes P1 or P2, or its complementary CC an isolated polynucleotide which encodes P1 or P2 or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, and CC promoter, a vector comprising the polynucleotide operably linked to a promoter, a seed or tuber from the transgenic plant, a paper sixing and/or coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composistion molecule or their combinations or glucan and starch where the plucan is produced in the amyloplast and/or vacuole or a maize line cell comprising the glucan in a plant. The method comprises transforming a glucosyltransferace B or D enzyme, wild-type or mutant and a paper glucosyltransferace B or D enzyme, wild-type or mutant and a paper glucosyltransferace plant and inducing expression of the conditions to produce a regenerated plant and inducing expression of the comprising the glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant and inducing expression of the created by the amyloplast of potato or the vacuole of sugar beet.

CC and lateves in paper manifacture, unlike prior art techniques, which the paper manifacture will be produced by GTF, which utilises biologically produced input materials, is more cost-effective and cenvironmentally friendly. Moreover, glucan in the present sequence is not shown in the specification but the indext is sequence appearing
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                                                                                                                                                                      S
                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                Query Match
Best Local :
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16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                        AAU98034 standard; Protein; 1475 AA
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    AAU98034
                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      36; Page -; 44pp; English.
                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                        ANDHISILEAWSDNDTPYLHD 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                  100.0%;
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                                                                                                                                                                                                            Score 119; UB ...
Pred. No. 5.4e-09;
                                                                                                                                      501
                                                                                                                                                                                                                                                    Length 1475;
                                                                                                                                                                                                                  Indels
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07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                     Misc-difference
                                                                                                                                                                                                                                                                                                                                                Misc-difference
                                                                                                                                                                                                                                                                                                                                                                  Synthetic.
                                                                                                                                                                                                                                                                                                                                                                        Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                  amyloplast; vacuole; paper manufacture; mutant; mutein
                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic
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                                                                                                                                                                                                                                                                                 11-DEC-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                         mutans glucosyltransferase
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                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                             2000US-0740274.
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95US-0478704.
95US-0482711.
95US-0485243.
95US-0485243.
98US-0007999.
98US-0008172.
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                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
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М
                                                                                                                                                                                                                                                                                                                               /note= "Wild-type Asp substituted by Thr'
                                                                                                                                                                                                                                                                                                                                          "Wild-type Asp
                                                                                                                                                                                                                                                                                                                                                                                                          GTFB mutant D457N/D567T
                                                                                                                                                                                                                                                                                                                                          substituted
                                                                                                                                                                                                                                                                                                                                           λq
                                                                                                                                                                                                                                                                                                                                                                                          molecule;
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Glucosyltransferase B or D protein useful for producing a glucan $\mathbf u$ as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions

Page -; 44pp; English.

The invention an isolated protein comprising a glucosyltransferase (GGTF) B polypepide having changes at position from IA48V, D457N, CC D567T, K1014T, D457N/D57TK, D457N/D57TK, D57T/D57TK/K1014T, 1448V/D457N/D567T/D57TK/K779Q/K1014T, CC D567T/D57TK/K1014T, 1448V/D457N/D567T/D57TK/K779Q/K1014T, CC D567T/D57TK/K779Q/K1014T, 1448V/D457N/D567T/D57TK/K779Q/K1014T, CC D567T/D57TK/K779Q/K1014T, CC D47T/D57TK/K779Q/K1014T, And K779Q or a GFF D polypeptide having CC Changes at positions from T589D, T589E, N47ID, N47ID/T589D, and CC CAM7ID/T589E. Also included are a glucan produced by the GTF mutant, CC D47T/T589E. Also included are a glucan produced by the GTF mutant, CC D47T/T589E. Also included are a glucan produced by the GTF mutant, CC D47T/T589E. Also included are a glucan produced by the GTF mutant, CC D47T/T589E. Also included are a glucan produced by the GTF mutant, CC D47T/T589E. Also included are a glucan produced by the GTF mutant, CC D47T/T589E. Also included are a glucan produced by the GTF mutant, CC D47T/T589E. Also included are a glucan produced in the anyloplase and/or coating the GTF mutant, CC D4T/T589E. Also included in the anyloplase and/or vacuole or a maize line CC D4T/T589E. Also included in the anyloplase and/or vacuole or a maize line CC D5T/T589E. Also included in the anyloplase and/or vacuole or a maize line CC D5T/T589E. Also included in the anyloplase and/or vacuole or a maize line CC D5T/T589E. Also included in the anyloplase and/or vacuole or a maize line CC D5T/T589E. Also included in the anyloplase included in the plant and a paper of plant cell with the vector, growing the plant cell under plant growing a glucan in a plant. The method comprises transforming a plant cell with the vector prowing the plant and inducing expression of the regenerated plant, where the vector contains a transfer clude in the anyloplase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce the glucan in the main contains a transfer containt, and glucan in the contains a transfer containt

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                   16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                        Misc-difference 571
                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers Misc-difference 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S. mutans glucosyltransferase GTFB mutant D457N/D571K
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAU98035;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAU98035 standard; Protein; 1475
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                                                                        Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                              11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                   19-DEC-2000;
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                                                                                                                                                                                                                                                                                                                                                     US2002031826-A1
                                                                                                                                                                           (NICH/) NICHOLS
                                                                                                                                                                                                                                         07-JUN-1995;
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                                                                                                                             2002-414332/44
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95US-0478704.
95US-0482711.
95US-0485243.
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98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AA;
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                                                                                                                                                                                                                                                                                                                                                                              /note= "Wild-type Asp substituted by Lys"
                                                                                                                                                                                                                                                                                                                                                                                                    /note= "Wild-type Asp substituted by Asn"
                                                  44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          paper manufacture; mutant;
                                                  English
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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N,

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CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC V165A/X170A/X171A, and K779Q or a GTF D polypeptide having C rhanges at positions from T589D, T589E, M47LD/T589D, and K779Q or a GTF D polypeptide having CC Anyges at positions from T589D, T589E, M47LD/T589D, and isolated polynuclectide which encodes P1 or P2, or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, C an expression cassette comprising the polynucleotide operably linked to a C promoter, a vector comprising the polynucleotide operably linked to a c promoter, a seed or tuber from the transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or c coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line c deficient in starch biosynthesis, transformed with a gene encoding a glucan produced with a gene encoding a glucan plant. The method comprises transforming a glucosyltransferase B or D enzyme, wild-type or mutant and a paper comprising the glucan in a plant. The method comprises transforming a c plant cell with the vector, growing the plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the created plant, where the vector contains a transforming a c plant cell with the asyloplast of potato or the vacuole of sugar beet. The produced in the amyloplast of potato or the vacuole of sugar beet. The produced in paper manufacture. Unlike prior art techniques, which creating the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and convironmentally friendly. Moreover, glucans also exhibit thermoplastic corrobraties and impart coloss to the paper during soething step.
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AAU98036
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Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                              Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                              S. mutans glucosyltransferase GTFB mutant D567T/D571K.
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US2002031826-A1
                                                                                   Location/Qualifiers
Misc-difference 567
                                                                                                                                                                             Streptococcus mutans
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                                                          Misc-difference 571
                                                                                                                                                        Synthetic
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                                                                                                                                                                                                                                                                                                                                                                                                                     standard; Protein; 1475 AA
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                                       /note= "Wild-type Asp substituted by Lys"
                                                                             note= "Wild-type Asp substituted by Thr"
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Pred. No. 5.4e-09;
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14-MAR-2002

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481 ANDHLSILEAWSDNDTPYLHD 501

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Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes: paper manufacture, comprises mutations in specific positions
                                                                                                                                                   Claim 36; Page -; 44pp; English.
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16-JAN-1998;
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98US-0008172.
98US-0009620.
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95US-0478704.
95US-0482711.
95US-0485243.
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Н 21;

ANDHLSILEAWSDNDTPYLHD

Matches Query Match Best Local

Similarity

100.0%;

Score 119; Ub pred. No. 5.4e-09;

Length 1475; Indels

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Gaps

0

Conservative

0;

Sequence

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RESULT 10
AAU98037
ID MAN98
XX AAU98
AC AAU98
AC AAU98
AC AAU98
XX AAU98
XX COAUC
XX
CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, D457N/D567T, D457N/D577LK/T79Q/K1014T, CC D567T/D571K/K7014T, 1448V/D457N/D567T/D571K/K779Q/K1014T, CC Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CC changes at positions from T589D, T589E, N471D, N471D/T589D, and CC CATTON COLOR of the polymucleotide which encodes P1 or P2, or its complementary CC an isolated polymucleotide which encodes P1 or P2, or its complementary CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the polymucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell CC introduced with the vector, a transgenic plant, a paper sizing and/or vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucosyltransferase B or D enzyme, wild-type or mutant and a paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ucosyltransferase B or D protein useful for producing a glucan useful substitutes for and additions to modified starch and latexes in per manufacture, comprises mutations in specific positions
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 11
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Best Local S
Matches 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polymucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                         coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Glucosyltransferase; GTFB; transgenic plant; paper sizing;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAU98038 standard; Protein; 1475
                                                                                                                                                                                  Misc-difference
                                                                                                                                                                                                                                                                                                         Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                Synthetic
                                                                                                                                                                                                               Misc-difference
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                                                                                                                                                                                                                                                                           Misc-difference
                                                                                                                                                                                                                                                                                                                                     Misc-difference 448
                                                                                                                                      US2002031826-A1
                                                                          19-DEC-2000;
                                                                                                        14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         mutans
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21; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTFB mutant I448V/D457N/D567T/D571K/K779Q/K1014T
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                                                                             2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                mutans.
   98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
                                                                                                                                                                                                                                             /note= "Wild-type Asp
571
                                                                                                                                                                                                                                                                        /note= "Wild-type Asp substituted
567
                                                                                                                                                                                                                                                                                                       /note=
457
                                                                                                                                                                                    1014
                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                             /note= "Wild-type Lys substituted by Gln"
                                                                                                                                                                                                                               /note= "Wild-type
                                                                                                                                                                    note=
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                                                                                                                                                                  "Wild-type
                                                                                                                                                                                                                                                                                                                      "Wild-type Ile substituted by Val"
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                                                                                                                                                                    Lys
                                                                                                                                                                                                                               Asp
                                                                                                                                                                      substituted
                                                                                                                                                                                                                                                             substituted
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The invention an isolated protein comprising a glucosyltransferase (CFTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, D571K(K1014T, 1448V)A57N/D571K, D567T/D571K(K1014T, 1448V)A57N/D57TK, D567T/D571K(K1014T, 1448V)A57N/D57TK/D571K(K1014T, 1448V)A57N/D57TK/D571K(K1014T, 1448V)A57N/D57TK/D57TK/T90/K1014T, and K7790 or a GTT D polypeptide having changes at positions from 7889D, 7589E, M471D, M471D/T589D, Also included are a glucan produced by the GTF mutant, an expression cassette comprising the polymocleotide operably linked to a promoter, a vector comprising the polymocleotide operably linked to a promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant, a paper sixing and/or vector, a seed or tuber from the transgenic plant, a paper sixing and/or vector, a seed or tuber from the transgenic plant, a paper sixing and/or vector, a seed or tuber from the transgenic plant, a paper sixing and/or vector, a seed or tuber from the transgenic plant, a paper sixing and/or vector, a seed or tuber from the transgenic plant, a paper sixing and/or vector a seed or tuber from the transgenic plant, a latex, therefore the glucan is produced in the amyloplast and/or vectorle or a maize line of the glucan in a plant. The method comprises transforming a glucosyltransferase B or D enzyme, which type or mutant and apaper glucosyltransferase B or D enzyme, which type or mutant and apaper complising the glucan in a plant. The method comprises transforming a plant produced in the amyloplast of portation and inducing expression of the complying a binding protein to produce a transgenic plant, and glucan complying the binding protein to produce a transgenic plant, and glucan the present sequence from the vector in paper manifacture. Unlike prior art techniques, which complying the glucan in the substitutes for and additions to modified starch for the vector in paper manifacture. Unlike prior art techniques, which can be present sequence a snot shew that in co
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase B as substitutes for and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim
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                                         the information in claim
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Page -; 44pp; English
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98US-0008172.
98US-0009620.
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RESULT 12
AAU98039
ID AAU98
XX
AC AAU98
XX
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                                                                                                                            Query Match
Best Local S
Matches 21
          AAU98039
                               AAU98039 standard; Protein; 1475 AA
                                                                                    481
                                                                                                                             21;
                                                                                                                                       Similarity
                                                                                    ANDHLSILEAWSDNDTPYLHD
                                                                                                        ANDHISILEAWSDNDTPYLHD 21
                                                                                                                           100.0%; ilarity 100.0%; Conservative
                                                                                                                              0
                                                                                                                              Score 119; DB 23; Pred. No. 5.4e-09; O; Mismatches 0;
                                                                                      503
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Sequence

1475

AA;

Length 1475;

(first

entry)

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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, D457N/D571K, D567T/D571K/K1014T, L448V/D457N/D571K, D567T/D571K/K1014T, I448V/D457N/D571K, D567T/D571K/K71014T, I448V/D457N/D571K, D567T/D571K/K779Q/K1014T, CC D567T/D571K/K1014T, I448V/D457N/D657T/D571K/K779Q/K1014T, CC PARTYD571K/K1014T, I448V/D457N/D657T/D571K/K779Q/K1014T, CC PARTYD571K/K7101AT, And K779Q or a GTF D polypeptide having changes at positions from T589D, N471D, N471D/T589D, and CC Polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polymucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell cC introduced with the vector, a transgenic plant comprising the condition of the mutant GTF, wild type or, starch, host cell with a gene encoding the mutant GTF, wild type or, starch where the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a cc plant cell with the vector, growing the plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from cc polymucleotide for a time sufficient to produce the glucan in the cc regenerated plant, where the vector contains a transit sequence from cid places in paper manufacture. Unlike prior art techniques, which cc and latexes in paper manufacture. Onlike prior art techniques, which cc and latexes in paper manufacture. Onlike prior art techniques, which cc input materials that produce chemical effluents, paper
 16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
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07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2002-414332/44
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             manufacture, comprises mutations in
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input materials that produce chemical effluents, paper
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95US-0478704.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
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ARESULT 13
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Matches 21
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  The invention an isolated protein comprising a glucosyltrani (GTF) B polypeptide having changes at position from 1448V, 1 D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D457N/D571K, D457N/D571K, D457N/D571K/K1014T, D457N/D57N/D571K/K779Q/K1014T, Y148V/D457N/D57T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D,
                                                                                                                                                                                                                                                                      Glucosyltransferase B or D protein useful for producing as substitutes for and additions to modified starch and
                                                                                                                                                                                                                                                                                                                                                    WPI; 2002-414332/44
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16-JAN-1998;
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07-JUN-1995;
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                                                                                                                                                                                                                                          paper manufacture, comprises mutations in
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                                                                                                                                                                                           Claim 36; Page -; 44pp;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              (NICH/) NICHOLS
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95US-0478704.
95US-0482711.
95US-0485243.
95US-0485243.
98US-0007999.
98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers 779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "Wild-type Lys substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                           English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        501
                                                                                                                                                                                                                                                  specific
                                                                                                                  glucosyltransferase
from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              γd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                     positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gln"
                                                                                                                                                                                                                                                                              a glucan useful
latexes in
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             and
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Loc
Matches
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The present sequence represents a GTFB mutant of the invention.
Note: The present sequence is not shown in the specification but
was created by the indexer using the GTFB sequence appearing as AAU98027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    anti-caries; glucosyl transferase-B; immunotherapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus mutans monoclonal antibody-related protein #1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAU79284 standard; Protein; 1476
                                                                                                                                                                                                                                                                                                                                                                                       04-OCT-2000; 2000JP-0304889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         16-APR-2002
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                                                                                                                                                                                                                                                                                              04-OCT-2000; 2000JP-0304889
         Anti-caries agent composed of a monoclonal antibody against
                                                                                                            WPI; 2002-448101/48.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
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                                                                                                                                                                                                          UNIV NIPPON
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ANDHISILEAWSDNDTPYLHD 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ANDHESILEAWSDNDTPYLHD 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     dental caries; water insoluble glucan synthetase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ilarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           in
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                claim 36.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              inhibitory enzyme against water insoluble glucan synthetase of glucosyl transferase-B (GTF-B) of Streptococcus mutans \,\,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S. mutans glucosyltransferase GTFC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-AUG-2002
                                                                                                                                                                Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               coating composition;
amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Glucosyltransferase;
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The invention an isolated protein comprising a glucosyltransferase (GTP) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,
                                                                                                                                                                                                                                                                                     WPI; 2002-414332/44.
N-PSDB; ABK52939.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19-DEC-2000; 2000US-0740274.
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                                                                                                        Disclosure; Page 30-33; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                              (NICH/) NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                501
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Coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan in a plant. The method comprises transforming a glucon in a plant. The method comprises transforming a cC plant cell with the vector, growing the plant and inducing expression of the polymuclectide for a time sufficient to produce the glucan in the CC regenerated plant, where the vector contains a transit sequence from CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgeric plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. CC Glucans are useful as substitutes for and additions to modified starch cand latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper CC biologically produced input materials is more cost-effective and CC properties and impart gloss to the paper during coating step.

The present sequence represents GTFC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/cr
Sequence
1375 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  linked to a
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Query Match
Best Local Similarity
Matches 20; Conserv Conservative 92.4%; Score 110; 95.2%; Pred. No. 1 0; Mismatches DB 23; Length 1375; ...1e-07; Indels 0; Gaps

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Search completed: November 13, 2003, 09:38:25 Job time: 39.5166 secs 멍 507 ANDHLSILEAWSYNDTPYLHD 527 ANDHLSILEAWSDNDTPYLHD 21

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Run on:
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB
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Perfect score:
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seq length: 2000000000
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139.565 Million cell updates/sec
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1: /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*

2: /cgn2_6/ptodata/2/pubpaa/PCT_NEW_PUB.pep:*

3: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*

5: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*

6: /cgn2_6/ptodata/2/pubpaa/PCTUS_PUBCOMB.pep:*
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Copyright (c) 1993 - 2003 Compugen Ltd.
/cgn2_6/ptodata/2/pubpaa/US08_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

15	14	13	12	11	10	9	æ	7	σ	ហ	4	ω	2	ц	Result
46.5	47	47	47.5	47.5	49	49	49	51	60	71	75	75	110	119	Score
39.1	39.5	39.5	39.9	39.9	41.2	41.2	41.2	42.9	50.4	59.7	63.0	63.0	92.4	100.0	Query Match
1604	15	15	534	534	1781	535	302	502	584	522	1430	545	1375	1475	Query Match Length DB
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US-09-888-615-73	US-10-067-649-90	US-10-295-693-90	US-10-293-865-24	US-09-344-882-24	US-09-995-749A-2	US-09-995-749A-13	US-09-815-242-14004	US-10-009-823A-1	US-09-995-749A-12	US-09-995-749A-11	US-09-740-274-6	US-09-995-749A-10	US-09-740-274-4	US-09-740-274-2	ID
Sequence 73, Appl	Sequence 90, Appl	Sequence 90, Appr	Sequence 24, Appr	Sequence 24, Appl	Sequence 2, Appli	-	Sequence 14004, A	Sequence 1, Appli	Sequence 12, Appl	Sequence 11, Appl	Sequence 6, Appli	Sequence 10, Appl	Sequence 4, Appli	Sequence 2, Appli	Description

t 4 10	44	43	42	41	40	9	38	37	36	3 5	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
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-761-833	US-09-738-626-6855	US-09-988-067B-26	US-09-945-301-14	2-9	US-10-092-908-40	ū	US-09-815-242-10190	US-10-227-610-2	US-09-802-669-46	US-10-177-980-12	US-10-059-585-56	US-10-156-761-7562	US-09-095-478-7	5-478-	9-878-78	US-09-764-891-3308	ň	US-10-080-114A-7	US-10-211-962-96	US-09-815-242-13981	US-09-815-242-10188	US-09-815-242-11634	US-10-156-761-9158	US-10-127-032-167	US-10-156-761-12823	45-125	0-026-3	- 1	US-09-738-626-4571
e 833	Sequence 6855, Ap	5	Sequence 14, Appl	- OD	æ	·	, 0.6TOT	ጣ		Œ		Sequence 7562, Ap			ш	w	-	7, A		Sequence 13981, A	Sequence 10188, A	11634,	e 9158,		e 12	Ø	97.4	9	e 45

ALIGNMENTS

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CURRENT FILING DATE: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR PELING DATE: 1998-12-11
PRIOR PELING DATE: 1998-01-16
PRIOR PELING DATE: 1998-01-16
PRIOR PELING DATE: 1995-06-07
PRIOR PELING DATE: 1995-06-07
PRIOR PELING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
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US-09-740-274-2
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                                                                                                                                                                                       ORGANISM: Streptococcus mutans US-09-740-274-2
                                                                                                                                                                                                                                                                     SOFTWARE: Fas
SEQ ID NO 2
LENGTH: 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
FILE REFERENCE: 0357CRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 2, Application US/09740274
Patent No. US20020031826A1
                                                                             Query Match 100.0%; Score 119; DB 9; Best Local Similarity 100.0%; Pred. No. 1.8e-09; Matches 21; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
                                                                                                                                                                                                                                                 TYPE: PRT
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FILING DATE: 1998-01-16
1 ANDHLSILEAWSDNDTPYLHD 21
                                                                                                                                                                                                                                                                                                                             FastSEQ for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                             08/482,711
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                                                                                                                                           Length 1475;
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ANDHLSILEAWSDNDTPYLHD 501

US-09-740-274-4

Sequence 4, Application US/09740274 Patent No. US20020031826A1

GENERAL INFORMATION:

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                                                              US-09-995-749A-10
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SEQ ID NO 4
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Best Local Similarity
                                                                                                                      SOFTWARE: PatentIn
SEQ ID NO 10
                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
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Matches
              Query Match
Best Local Similarity
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CURRENT FILING DATE: 2000-12-19
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
                                                                                                                                                  PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
                                                                                                                                                                                                                                                                TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES FILE REFERENCE: BO43388-CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ILE REFERENCE:
                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/09/995,749A CURRENT FILING DATE: 2001-11-29
                                                                                                                                                                                                                                                                                                                                           APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
                                                                                                                                                                                                                                                                                                               APPLICANT:
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                                                                           ORGANISM: Streptococcus mutans
                                                                                                          LENGTH: 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 1375
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APPLICATION NUMBER: 09/
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APPLICATION NUMBER:
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15;
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RAHAOUI, HAKIM
LEER, ROBERT-JAN
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Conservative
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1995-06-07
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                63.0%;
71.4%;
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Pred. No. 4
              Score 75; DB 10; Length 545; Pred. No. 0.0033;
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   Mismatches
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    Indels
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US-09-740-274-6
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; LENGTH: 1430
; TYPE: PRT
; ORGANISM: streptococcus mutans
US-09-740-274-6
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                                                                                                                                                         FILL REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR FILING DATE: 2000-05-25
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
                                                    ; TYPE: PRT ; ORGANISM: Leuconostoc mesenteroides US-09-995-749A-11
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Patent No. US20020031826A1
GENERAL INFORMATION:
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                                                                                                          SEQ ID NO 11
LENGTH: 522
                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 11, Application US/09995749A Patent No. US20020155568A1
Query Match
Best Local Similarity
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR APPLICATION NUMBER: 08/478,704
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PRIOR APPLICATION NUMBER:
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PRIOR FILING DATE: 1998-
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PRIOR APPLICATION NUMBER: 08/482,711
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                                                                                                                                           SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: VAN GEEL-SCHUTTEN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local Similarity
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                                                                                                                                                                                                                                                                                                                                                   RAHAOUI,
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                                                                                                                                                                                                                                                                                                                                 LEER, ROBERT-JAN
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   59.7%;
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     Score 71;
Pred. No.
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     DB 10;
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US-10-009-823A-1
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LENGTH: 584
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         Best Local Similarity Matches 8; Conserv
                                                                                                                                                        SEQ ID NO 1
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
                                             Query Match
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APPLICANT: Rosey, Everett L
APPLICANT: Sinistaj, Meri
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CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
                                                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/10/009,823A
CURRENT FILING DATE: 2002-08-13
PRIOR APPLICATION NUMBER: PCT/AU00/00437
PRIOR FILING DATE: 2000-05-11
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                                                                                                                                                                                                                                                                                                                     APPLICANT: Ankenbauer, Robert G.
TITLE OF INVENTION: LAWSONIA DERIVED GENE AND RELATED FLG
TITLE OF INVENTION: POLYPEPTIDES, PEPTIDES AND PROTEINS
FILE REFERENCE: DAVI150.001APC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILE REFERENCE: BO43388-CIP
                                                                                                                                                                                        PRIOR APPLICATION NUMBER: US 60/133,973
PRIOR FILING DATE: 1999-05-13
NUMBER OF SEQ ID NOS: 13
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                                                                                                                                                                         NUMBER OF SEQ ID NOS: 13
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                                                                                                LENGTH: 502
TYPE: PRT
ORGANISM: Lawsonia intracellularis
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Sinistaj, Meri
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             Conservative
                            42.9%;
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LUBBERT
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                            Score 51;
Pred. No.
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             FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
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SOFTWARE:
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 PatentIn Ver.
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LEER, ROBERT-JAN
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RESULT 8
US-09-815-242-14004
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SEQ ID NO 14004
LENGTH: 302
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TITLE OF INVENTION: Identification of Essential Genes
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITEA.011A
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR PILING DATE: 2000-03-21
Sequence 13, Application US/09995749A Patent No. US20020155568A1
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                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 60/269,308 PRIOR FILING DATE: 2001-02-16
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PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                               ORGANISM: Salmonella typhi
                                                                                                                                                                                                                 Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: 60/257,931
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: 60/253,625
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                                                                                                                     267 NDRLVIQEVLEASDIPYRHD 286
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5. US20020061569A1
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                                                                                                                                                                                                 Conservative
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                                                                                                                                                                                                                     Score 49;
Pred. No.
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RESULT 10
US-09-995-749A-2
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Best Local Similarity 40.0%;
Matches 8; Conservative
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LENGTH: 1781
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.TYPE: PRT
ORGANISM: Lactobacillus reuteri
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APPLICANT: DIJKHUIZEN, LUBBEI
APPLICANT: RAHAOUI, HAKIM
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
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CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR TOTAL
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            CURRENT APPLICATION NUMBER: US/09/344,882
CURRENT FILING DATE: 1999-06-25
CURRENT FILING NUMBER: US 60/090,717
PRIOR FILING DATE: 1998-06-26
PRIOR FILING DATE: 1998-06-26
                                                                                                APPLICANT: Lutziger, Isabelle
APPLICANT: Wen, Tsui-Jung
TITLE OF INVENTION: Materials and Methods for the Alteration
TITLE OF INVENTION: Acetyl CoA Levels in Plants
                                                                                                                                                                         APPLICANT:
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                                                                                     FILE REFERENCE:
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LEER, ROBERT-JAN
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                                                                                                                                                                                 Johnson, Jerry L
Allred, Carolyn C
                                                                                                                                                                                                                                                                            Wurtele, Eve S
Oliver, David J
                                                                                                                                                                                                                                                                                                           Nikolau, Basil J
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ID NOS:
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                                                                                                                                                                                                                                             Patrick S
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Pred. No. 31;
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Pred. No.
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SEQ ID NO 24
LENGTH: 534
TYPE: PRT
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US-10-295-693-90
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Publication No. US20030106090A1
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                                                                                                                                                                        Sequence 90, Application US/10295693 Publication No. US20030198976A1 GENERAL INFORMATION:
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SOFTWARE: PatentIn Ver. 3.1
SEQ ID NO 24
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APPLICANT: Wen, Tsui-Jung
TITLE OF INVENTION: Materials and Methods
TITLE OF INVENTION: Acetyl CoA Levels in
FILE REFERENCE: 217113
APPLICANT: Bristol-Myers Squibb Company
TITLE OF INVENTION: NOVEL HUMAN G-PROTEIN COUPLED RECEPTOR, HGPRBMY14, RELATED TO THE
TITLE OF INVENTION: GPCR, GPR73
TILE REFERENCE: DO118 CIP
CURRENT APPLICATION NUMBER: US/10/295,693
CURRENT FILING DATE: 2002-11-14
PRIOR APPLICATION NUMBER: US 60/266,525
PRIOR FILING DATE: 2001-02-05
PRIOR FILING DATE: 2001-02-05
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CURRENT FILING DATE: 2002-11-13
CURRENT FILING DATE: 00/344,882
PRIOR APPLICATION NUMBER: US 00/344,882
PRIOR APPLICATION NUMBER: US 60/090,717
PRIOR FILING DATE: 1998-06-26
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APPLICANT: Wurtele, Eve S
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ORGANISM: Arabidopsis Thaliana
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Oliver, David J
onehal, Robert
Datric
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Allred, Carolyn C
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Pred. No. 53;
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; PRIOR APPLICATION NUMBER: US 60/329,897; PRIOR FILING DATE: 2001-10-16; NUMBER OF SEQ ID NOS: 95; SOFTWARE: PatentIn version 3.1; SEQ ID NO 90; LENGTH: 15; TYPE: PRI 15; ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-067-649-90
Sequence 90, Application US/10067649
Publication No. US20030100057A1
GENERAL INFORMATION:
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         APPLICANT: PLOWAN, GREGORY
APPLICANT: WHYTE, DAVID
APPLICANT: CHARYDCZAK, GLEN
APPLICANT: CHARYDCZAK, GLEN
APPLICANT: MANNING, GERARD
APPLICANT: MANNING, GERARD
APPLICANT: SUDARSANAM, SUCHA
APPLICANT: SUDARSANAM, SUCHA
APPLICANTO: NOVEL PROTEASES
FILE REFERENCE: 038602/1214
CURRENT APPLICATION NUMBER: US/09/888,615
CURRENT PILING DATE: 2001-06-26
PRIOR APPLICATION NUMBER: 60/214,047
PRIOR FILING DATE: 2000-06-26
PRIOR FILING DATE: 2000-06-26
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Sequence 73, Application US/09888615
Patent No. US20020064856A1
GENERAL INFORMATION:
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Best Local Similarity 61.5%;
Matches 8; Conservative
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TITLE OF INVENTION: A NOVEL HUMAN G-PROTEIN COUPLED RECEPTOR, HGPREMY14, RELATED TO
TITLE OF INVENTION: ORPHAN GPCR, GPR73
FILE REFERENCE: DO118 NP
CURRENT APPLICATION NUMBER: US/10/67,649
CURRENT FILING DATE: 2002-02-05
PRIOR APPLICATION NUMBER: US 60/266,525
PRIOR APPLICATION NUMBER: US 60/266,525
PRIOR FILING DATE: 2001-02-05
PRIOR PPLICATION NUMBER: US 60/329,897
PRIOR FILING DATE: 2001-10-16
NUMBER OF SEQ ID NOS: 92
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TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
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SEQ ID NOS: 150
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Maximum DB seq length: 200000000
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Listing first 45 summaries
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Perfect score:
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score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.
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130.561 Million cell updates/sec
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Copyright (c) 1993 - 2003 Compugen Ltd.
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G3P_MELGA
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G3P1_SALTY
G3P_COLLI
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G3P2_MAIZE
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G3P3_CRYPA
G3P1_JACOR
SUS2_MAIZE
TKN1_RABIT
TKN1_RABIT
TKN1_MOUSE
TKN1_KAT
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-!- DISEASE: DENTAL CARIES.	_
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AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.	_
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Li S., Zhu H., Najar F., Lai H., White J., Roe B.A.,	ъ .
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RX MEDLINE=22295063; PubMed=12397186;	71
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EMBL; M17361; AAA88588.1; -.
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P11470; 069382; 069385; 069388; 069382;

01-NOV-1988 (Rel. 09, Created)

28-FEB-2003 (Rel. 41, Last sequence update)

15-SEP-2003 (Rel. 42, Last annotation update)

Glucosyltransferase-SI precursor (EC 2.4.1.5) (G')

Glucosyltransferase (Sucrose 6-glucosyltransferase)
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               MEDLINE-87308013; PubMed=3040685;

Shiroza T., Ueda S., Kuramitsu H.K.;

"Sequence analysis of the gtfB gene from Streptococcus mutans.";

"Sequence analysis of the gtfB gene from Streptococcus mutans.";

J. Bacteriol. 169:4263-4270(1987).

-I- FUNCTION: PRODUCTION OF EXTRACELULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAU OF THEIR ABILLTY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

-I- CATALYTIC ACTIVITY: Sucrose + (1.6)-alpha-D-glucosyl}(N) = D-fructose + (1.6)-alpha-D-glucosyl}(N) = D-SUBCELLULAR LOCATION: Secreted.
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Ueda S., Shiroza T., Kuramitsu H.K.;
"Sequence analysis of the gtfC gene
Gene 69:101-109(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=UA159 / ATOMEDLINE=22295063;
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Kimura S., Hamada S
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8148 / Serotype C;
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Y -> H (IN STRAIN MT4467).

R -> A (IN REF. 1).

ADQDVRVAASTAPSTDGK -> LIKMFALRLARPHQQMA
(IN REF. 1).

H -> L (IN REF. 1).
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EMBL; D88655; BAA26106.1; -.
EMBL; D88656; BAA26110.1; -.
EMBL; D88661; BAA26114.1; -.
EMBL; D89978; BAA26120.1; -.
EMBL; D89978; BAA26120.1; -.
EMBL; M17361; AAA88706.1; -.
EMBL; M17361; AAA88589.1; -.
EMBL; M17361; AAA88589.1; -.
EMBL; M17361; GAA88589.1; -.
EMBL; M17361; GAA8868; GAA88
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SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
BINDING PROTEIN FROM S.MUTANS.
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Glycosyltransferase; Signal; Repeat; Dental caries;
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A REPEAT (IN STRAIN GS-5).

V -> I (IN STRAIN GS-5).

P -> L (IN STRAIN GS-5).

D -> V (IN STRAIN GS-5).

S -> A (IN STRAIN GS-5).

A -> T (IN STRAINS GS-5 AND MT4467).

A -> T (IN STRAINS GS-5, MT4239 AND MT4467).

A -> V (IN STRAINS GS-5 AND MT4239 AND MT4467).

A -> V (IN STRAINS MT4251).

Y -> D (IN STRAINS MT4245 AND MT4251).

Y -> F (IN STRAINS MT4245 AND MT4251).

Y -> D (IN STRAINS MT4245, MT4251).

Y -> D (IN STRAINS MT4245, MT4251).

Y -> D (IN STRAINS MT4245, MT4251).

N -> D (IN STRAINS MT4245, MT4251).
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2.4 A, 1 C AND 1
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A REPEAT.
C REPEAT.
C REPEAT.
                                                                                                                                                                                          AND MT8148)
AND MT8148)
R -> K (TM C
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R -> K (IN S
AND MT8148)
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MISSING
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T -> A (
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CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
2.4 A, 1 C AND 1 AC REPEATS.
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IISSING (IN STRAIN MT4245).

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IN STRAIN GS-5).

IN STRAIN MT8148).

IN STRAIN MT8148).

IN STRAIN MT4239).

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                                                                                                                                                                  GS-5,
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5 AND MT4251).
5 AND MT4251).
5, MT4251, MT44
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01-AUG-1992
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Kagawa H.;
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GTF2_S
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01-AUG-1992 (Rel. 23, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collaboratic between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it use by non-profit institutions as long as its content is in no was use by non-profit institutions as long as its content is in no was modified and this statement is not removed. Usage by and for commercia modified and this statement is not removed. Usage by and for commercia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                *Peptide sequences for sucrose splitting and glucan binding within Streptococcus sobrinus glucosyltransferase (water-insoluble glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
STRAIN=6715 / Serotype G;
MEDLINE=91123227; PubMed=1704006;
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Streptococcus downei (Streptococcus sobrinus)
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW_binding_1; 13.
Pfam; PF03224; Glyco hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental caries.
                                                                                                                                                                                   entities requires a license agreement (S or send an email to license@isb-sib.ch).
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[1]
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                                                                                                                                    EMBL; D90213; BAA14241.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteriol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CARIES.

MISCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH FROMMS OF GLUCONS (ALPHA 1,6-GLUCOSE).
                                                                                                                                                                                                                                                                                                                                                                                            SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 16 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FORMS OF GLUCANS.
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TSSGNWYYFGNDGYALIGWHVVEGRRVYFDENGVYRYASHD
QRNHWDYDYRRDFGRGSSSAVRFRHSRNGFFDNFFRE, ->
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(IN STRAIN MT4239).
(IN STRAINS MT4239 AND
(IN STRAIN MT8148).
                                                                                                                                                                                                                    (See http://www.isb-sib
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                                                                                                                                                                                                                                                                                                                                  a collaboration -
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15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase | precursor (EC 2.4.1.5)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JUL-1989 (Rel. 11,
01-JUL-1989 (Rel. 11,
15-SEP-2003 (Rel. 42,
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MEDLINE=87308014; PubMed=3040686;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Streptococcus downei (Streptococcus sobrinus).
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                 FORMS OF GLUCANS.

-i- SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-BINDING PROTEIN FROM S.MUTANS.

-i- SIMILARITY: Contains 19 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sobrinus MFe28.
                                                                                                                                      entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                     use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ferretti J.J., Gilpin M.L.,
"Nucleotide sequence of a gl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Sucrose 6-glucosyltransferase)
                          InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 16.
                                                                                               EMBL; M17391; AAC63063.1; -
                                                                                                                                                                                                                                    between the Swiss Institute of Bioinf
the European Bioinformatics Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteriol. 169:4271-4278(1987).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS,
TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DI
OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES I
                                                                                                                                                                                                                                                                                                                                                                                                                    OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CRYALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISBASE: DENTAL CARIES.

MISCELLABROUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH
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GLUCAN-BINDING (APPROXIMATE).
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; BCOA66D079351ECF CRC64;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gilmore K.S., Russell R.R., Ferretti J.J.;

"Analysis of the Streptococcus downei gtfs gene, which specifies a 
"Analysis of the Streptococcus downei gtfs gene, which specifies a 
glucosyltransferase that synthesizes soluble glucans.";

Infect. Immun. 58:2452-2458(1990).

-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT

-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT

-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT

-i- FUNCTION: PRODUCTION OF EXTRACES AND MEDIATE THE 
OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-DEC-1992 (Rel. 24, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Glucosyltransferase-S precursor (EC 2.4.1.5) (GTF-S) (Dextransucrase)
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                                 This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the European Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entities requires a license agreement (See http://www.isb-sorsend an email to license@isb-sib.ch).
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NCBI_TaxID=131
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                                                                                                                                                                                                                                                                                                                 -1- MISCELLANEOUS: GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=90316665; PubMed=2142479;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Sucrose 6-glucosyltransferase).
                                                                                                                                                                                                                                                                                                                                     AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + (1,6)-alpha-D-glucosyl)(N) =
fructose + {(1,6)-alpha-D-glucosyl)(N+1).

ENZYME REGULATION: GLUCAN SYNTHESIS BY GTF-S IS INDEPENDENT
PRIMER GLUCAN UNLIKE GTF-I.

DISEASE: DENTAL CARLES.
                                                                                                                                                                                                                         SIMILARITY: Contains 10 cell wall binding repeats.
                                                                                                                                                                                                                                                                         1,6-GLUCOSE).
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
                                                                                                                                                                                                                                                      BINDING PROTEIN FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            483
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; Lactobacillales; Streptococcaceae;
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                                                                                                                                                                                                                                                        S.MUTANS.
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CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
1.25 A, 2 B, AND 5 AC REPEATS.
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Pred. No. 7.6e-09;
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(See http://www.isb-sib.ch/announce/
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Matches 15
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Pfam; PF01473
Pfam; PF02324
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SIGNAL
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  pathogen.";
Proc. Natl. Ac.
-!- FUNCTION:
TO PLAY A
                                                                                                                                                                             SEQUENCE FROM N.A.

STRAIN=MT4239 / Serotype C, MT4245 / Serotype
MT4467 / Serotype E, and MT8148 / Serotype
MEDLINE=98231643; PubMed=9570124;
Fujiwara T., Terao Y., Hoshino T., Kawabata
Kimura S., Hamada S.;
Kimura S., Hamada S.;
Streptcoccus mutans.";
Streptcoccus mutans.";
                                                                                                                                                                                                                                                                                                       MEDLINE=91100958; PubMed=2148600;
Honda O., Kato C., Kuramiteu H.K.;
"Nucleotide sequence of the Streptococcus
the glucosyltransferase-S enzyme.";
J. Gen. Microbiol. 136:2099-2105(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRMU
                                                   STRAIN-UA159 / ATCC 700610 / Serotype C;
MEDLINE=2225063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A
"Genome sequence of Streptococcus mutans UA159, a
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Streptococcus mutans.
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PF01473; CW binding 1; 8.
PF02324; Glyco hydro 70; 1
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  Acad. Sci. U.S.A. 99:14434-14439(2002).
N: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT
A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL
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069389; 069392; 069398;
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CELL WALL BINDING 4.
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CELL WALL BINDING 10.
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a H., Lin S.,
3.A., Ferretti
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modified and this statement is not removed. Usage by ar
entities requires a license agreement (See http://www.isb
or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                      1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPI 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES FORMS OF GLUCANS.

SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GTTTAMBINDING PROTEIN FROM S.MUTANS.

SIMILARITY: CONTRACT
                                                                                                                                                                                                                                                                                                                                                                                              OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS. CAPALYTIC ACTIVITY: Sucrose + { (1,6)-alpha-D-glucosyl} (N) fructose + { (1,6)-alpha-D-glucosyl} (N+1). SUBCELLULAR LOCATION: Secreted. DISEASE: DENTAL CARIES. DENTAL CARIES. MATER-INSOLUBLE GLUCANS. MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS.
                                                                                                                                                                                                                BINDING PROTEIN FROM S.MUTANS
SIMILARITY: Contains 6 cell wa
                                                                                                                                       SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the EN
                          (See http://www.isb-sib
                                                                                                                     restrictions
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InterPro; IPR003318; Glyco_hydro_ Pfam; PF02324; Glyco_hydro_70; 1. Transferase; Glycosyltransferase; 1, M29296; AAA26895.1; -.
1, D88653; BAA26103.1; -.
1, D88655; BAA261107.1; -.
1, D88659; BAA26111.1; -.
1, D88659; BAA26115.1; -.
1, D8979; BAA26121.1; -.
1, D89979; BAA26121.1; -.
1, AE014932; AAA58619.1; -. 1462 1423 1295 1359 1423 Y-> H (IN STRAINS GS-5, MT42 MT4251, MT4467 AND MT8148). I-V (IN STRAIN GS-5, MT42: MT4251, MT4467 AND MT8148). K-> E (IN STRAIN MT4467). A-> S (IN STRAINS MT4251 AND A-> I (IN STRAINS MT4239 AND A-> I (IN STRAINS MT4239 AND A-> V (IN STRAINS MT4239 AND A-> V (IN STRAINS MT4239 AND GLUCOSYLTRANSFERASE-S 3 X 63 AA APPROXIMATE 70. Signal; Repeat; Dental TANDEM MT4239, caries; MT4245,

A -> S A -> V A -> T MT4251, V -> L D -> N E -> D

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MT8148)

9 AND MT4245) 1 AND MT8148) 9 AND MT4245) 9, MT4245 AND

AND

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MT4251)
Q -> H
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K (IN STRAIN MT4239).
F (IN STRAIN MT4239).

AND

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AND

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AIN MT4251) MT4239 AND

-> ADKGN

MT4245) T -> A

(IN STRAINS MT4467 AND

GS-5, M MT8148)

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                                                                                                               This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the E the Buropean Bioinformatics Institute. There are no rest use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an entities requires a license agreement (See http://www.isb-or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                           Leishmania mexicana.
Eukaryota; Euglenozoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glyceraldehyde
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-FEB-1994
28-FEB-2003
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01-APR-1993
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                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI TaxID=5665;
                                                               EMBL; X65220; CAA46323.1;
PIR; B48445; B48445.
HSSP; P06977; 1GAD.
                                                                                                                                                                                                                                                                                                           "Molecular analysis of the cytosolic and glycosomal glyceraldehyde-3-phosphate dehydrogenase in Leishmania mexicana.";
Mol. Biochem. Parasitol. 55:115-126(1992).
                                                                                                                                                                                                                                                                                                                                                                          STRAIN=Ssp. Mexicana;
MEDLINE=93063042; PubMed=1435864;
                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (GAPDH).
                                        InterPro; IPR000173;
InterPro; IPR006424;
                                                                                                                                                                                                                                                                                                                                                  Michels P.A.M.
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Biochem. Parasi tol. 55:115-120(1274).

CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + CATALYTIC ACTIVITY: D-glyceroyl phosphate + NADH.

NAD(+) = 3-phospho-D-glyceroyl phosphate + NADH.

NAD(a) = 3-phospho-D-glyceroyl phosphate + NADH.
                                                                                                                                                                                                                                              PATHWAY: Second phase of glycolysi
SUBUNIT: Homotetramer.
SUBCELLULAR LOCATION: Cytoplasmic
                                                                                                                                                                                                                       SIMILARITY: Belongs to the dehydrogenase family.
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             PF00044; gpdh; 1.
PF02800; gpdh_C; 1.
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(Rel. 41,
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el. 41, Last annotation update)
3-phosphate dehydrogenase, cytosolic (EC 1.2.1.12)
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71.4%;
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IG -> IR (IN STRAIN MT4251).

G -> R (IN STRAIN MT4251).

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H -> Q (IN STRAIN MT4239).

Y -> Q (IN STRAIN MT4239).

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Y -> C (IN STRAIN MT4467).

Y -> P (IN STRAIN MT4467).

Y -> P (IN STRAIN MT4467).

O -> P (IN STRAIN MT4245).

N -> D (IN STRAIN MT4245).

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                                                                                                                                                                                                                                   glyceraldehyde 3-phosphate
                                                                                                                                                                                ght. It is produced through a collaboration Bioinformatics and the EMBL outstation -
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0.0012;
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Query Match

Hypothetical SEQUENCE 3

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PROSITE; PS00071; GAPDH; 1.

Glycolysis; Oxidoreductase; NAD.

INIT MET 0 0 BY SIMILARITY.

BINDING 148 148 GLYCERALDEHYDE 3-PHOSPHATE.

BINDING 148 148 ACTIVATES THIOL GROUP DURIN

ACT SITE 175 175 ACTIVATES THOUGHOUS DURIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN=Ty2 / ATCC 700931;

MEDLINE=22531367; PubMed=12644504;

MEDLINE=22531367; PubMed=12644504;

Deng W., Liou S.-R., Plunkett G. III, Mayhew G.F., Rose D.J.,

Burland V., Kodoyianni V., Schwartz D.C., Blattner F.R.;

"Comparative genomics of Salmonella enterica serovar Typhi strains and CT18.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Hypothetical UpF0052 protein ybhK.
YBHK OR STY0835 OR T2086.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE-2134947; PubMed=11677608;

Parkhill J., Dougan G., James K.D., Thomson N.R., Pickard D., Wain J. Churcher C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia M., Churcher S., Basham D., Brooks K., Chillingworth T., Connerton P., Cronin A., Davis P., Davis R.M., Dowd L., White N., Farrar J., Feltwell T., Hamlin N., Haque A., Hien T.T., Holroyd S., Jagels K., Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C., Quail M., Rutherford K., Simmonds M., Skelton J., Stevens K., White Land Control of the Parry C., White Land C., White Land Control of the Parry C., White Land Control of the Parry C., White Land Control of the Parry C., White Land Control
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TIGRFAMS; TIGR01534; GAPDH-I; 1.
                                                                                                                                                                                                                                                                  between the Swiss Institute of Bioinformatics and the EMBL outstation -
the Buropean Bioinformatics Institute. There are no restrictions on its
use by non-profit institutions as long as its content is in no way
modified and this statement is not removed. Usage by and for commercial
entitles requires a license agreement (See http://www.isb-sib.ch/announce/
or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Whitehead S., Barrell B.G.; "Complete genome sequence of a multiple drug resistant Salmonella enterica secrovar Typhi CT18."; Nature 413:848-852(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Proteobacteria; Gamma
Enterobacteriaceae; Salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    J. Bacteriol. 185:2330-2337(2003).
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                                                                               EMBL; AL627268; CAD05249.1; -.
EMBL; AE016641; AA069704.1; -.
INLEWIF DER002882; UPF0052.
Pfam; PF01933; UPF0052; 1
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RESULT 10
UL16
UL16
AC P0327
AC P0327
DT 21-UU
DT 15-DE
BELF2
GN BGLF2
GN BGLF2
OC Virus
OC Wirus
OC WCBL
RN [1]
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Best Local
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                                                                                                                                                                  TUL16 EBV
P03271;
21-JUL-1986
21-JUL-1986
15-DEC-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF01933
Hypothetical
SEQUENCE 30
Epstein-barr virus (strain Viruses, dsDNA viruses, no Gammaherpesvirinae; Lymphoc NCBI TaxID=10377;
[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collable between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN=LT2 / SGSC1412 / ATCC 700720;

MEDLINE=21534948; PubMed=11677609;

McClelland M., Sanderson K.E., Spieth J., Clifton S.W., Latreille P.,

McClelland M., Sanderson K.E., Spieth J., Du F., Hou S., Layman D.,

Courtney L., Porwollik S., Ali J., Dante M., Du F., Hou S., Layman D.,

Leonard S., Nguyen C., Scott K., Holmes A., Grewal N., Milvaney E.,

Ryan E., Sun H., Florea L., Miller W., Stoneking T., Nhan M.,

Waterston R., Wilson R.K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       StyGene; SG?????; ybl
InterPro; IPR002882;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Salmonella typhimurium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YHHK_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Enterobacteriaceae; Salmonella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hypothetical UPF0052 protein ybhK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28-FEB-2003
15-SEP-2003
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P58586;
                                                                                                                        BGLF2 protein.
BGLF2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nature 413:852-856(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Complete genome sequence of Salmonella enterica serovar Typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    YBHK OR STM0801
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                                                                                                                                                                                                                                                                                                                                                                                             267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PF01933; UPF0052;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AE008733; AAL19738.1;
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(Rel. 42, Last annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                        (Rel.
(Rel.
(Rel.
                                                                                                                                                                                                                                                                       STANDARD;
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37,
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                                                                      1 B95-8) (Hum
5 RNA stage;
                                                                                                                                                                        sequence us
annotation
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Pred. No. 2.4;
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38A84708A1E185C3 CRC64;
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                                                                                                 (Human herpesvirus 4).
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                                                                                                                                                                                            update)
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                                                                                                                                                                                                                                                                       336
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                                                                             Herpesviridae,
                                                                                                                                                                        update)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 302;
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Best Local S
Matches 7
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EMBL; V01555; CAA24831.1; -.
EMBL; S77132; AAB21113.1; -.
PIR; C43044; QQBE40
InterPro; IPR004286; UL16_UL94.
Pfam; PF03044; UL16_UL94; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P10097;
01-MAR-1989
01-MAY-1992
28-FEB-2003
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MEDLINE=84270667; PubMed=6087149;

MEDLINE=84270667; PubMed=6087149;

Baer R., Bankier A.T., Biggin M.D., Deininger P.L., Farrell P.J.,

Gibson T.J., Hatfull G., Hudson G.S., Satchwell S.C., Seguin C.,

Tuffnell P.S., Barrell B.G.;

"DNA sequence and expression of the B95-8 Epstein-Barr virus genome.";

Nature 310:207-211(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a copyright the Swiss Institute of Bioinformatics and the EMBL the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and fo entities requires a license agreement (See http://www.isb-sib.or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Cloning and characterization of cDN transcripts from the BamHI G region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A MEDLINE=92113548;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and expression of BGLF2.";

J. Gen. Virol. 72:3047-3055(1991).
-!- SIMILARITY: BELONGS TO FAMILY THAT
HSV-6 ORF11R, EHV-1 46, HCMV UL94,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TRYBB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Late protein.
SEQUENCE 33
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Misset O., van Beeumen J.,
Opperdoes F.R.;
"Glyceraldehyde-phosphate
Comparison of the glycosom
                                                                                                                                                                                                                                      Opperdoes F.R.; "The cytosolic and glycosomal iscenzymes
                                                                                                                                                                                                                                                                                         MEDLINE=91249838; PubMed=2040303; Michels P.A.M., Marchand M., Kohl
                                                                                                                                                                                                                                                                                                                                        SEQUENCE FR
STRAIN=427;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Trypanosoma brucei brucei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glyceraldehyde
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 G3 PC
                                                                                            PRELIMINARY SEQUENCE OF 1-85.
MEDLINE=87161817; PubMed=3830153;
                                                                                                                                                                                         relationship.";
                                                                                                                                                                                                                  dehydrogenase in Trypanosoma brucei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (GAPDH).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TRYBB
                                                                                                                                                                                                                                                                                                                                                                                                                 TaxID=5702;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            336 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Rel. 10, Created)
(Rel. 22, Last Bequence update)
(Rel. 41, Last annotation update)
de 3-phosphate dehydrogenase, cyt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                        198:421-428(1991).
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  glycosomal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 36888 MW;
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                                                                      , J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                          Kinetoplastida; Trypanosomatidae;
dehydrogenase from Trypanosoma brucei
mal and cytosolic isoenzymes.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     232
                                                                           Lambeir A.M., van
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Chen J.Y., Yang C.S.; of cDNA clones corresponding to egion of the Epstein-Barr virus
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                                                                                                                                                                                                                  of glyceraldehyde-3-phosphate a distant evolutionary
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                                                                                                                                                                                                                                                                                           Wierenga
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RESULT 12
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Best Local
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                                         STRAIN=C735;
Hung C.-Y., Yu J.-J., Cole G.T.;
Hung C.-Y., Yu J.-J., Cole G.T.;
"Isolation and evaluation of expression of the glyceraldeh;
"Isolation and evaluation of expression of the glyceraldeh;
"phosphate dehydrogenase gene of Coccidioides immitis.";
"phosphate dehydrogenase gene of Coccidioides immitis.";
"phosphate dehydrogenase gene of Coccidioides immitis.";
"submitted (JUL-2000) to the EMBL/GenBank/DDBJ databases.

-!- CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + pho.

-!- SUBCILIULAR LOCATION: Cytoplasmic (By similarity).

-!- SUBCILIULAR LOCATION: Cytoplasmic (By similarity).

-!- SIMILARITY: Belongs to the glyceraldehyde 3-phosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produ-
between the Swiss Institute of Bioinformatics
the European Bioinformatics Institute. There a
use by non-profit institutions as long as i
modified and this statement is not removed. Us
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15-SEP-2003
15-SEP-2003
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INIT MET 0 0
BINDING 149 149 GLY
ACT_SITE 176 176 ACT
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HSSP; P06977; 1GAD.
InterPro; IPR000173; GAP dhdrogenase.
InterPro; IPR006424; GAPDH-I.
                                                                                                                                                                                                                                                                                    GPD.
                                                                                                                                                                                                                                                                                                i5-SEP-2003 (Rel. 42, Created)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last amnotation update)
Glyceraldehyde 3-phosphate dehydrogenase (EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
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Pfam; PF02800; gpdh_C; 1.
PRINTS; PR00078; G3PDHDRGNASE.
                                                                                                                                                                                                                        Onygenales; mitosporic NCBI_TaxID=199306;
                                                                                                                                                                                                                                                       Coccidioides posadasii.
Bukaryota; Fungi; Ascomycota;
                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . J. Biochem. 162:501-507(1987).

CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + phosphate NAD(+) = 3-phospho-D-glyceroyl phosphate + NADH.

PATHWAY: Second phase of glycolysis; first step.

SUBCELLULAR LOCATION: Cytoplasmic.

SIMILARITY: Belongs to the glyceraldehyde 3-phosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dehydrogenase family.
                                                                                                                                                                                                                                                                                                                                                                        COCPO
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Onygenales; Coccidioides
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R -> I.
A -> T (IN REF. 2
Q -> K (IN REF. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 47.5; DB 1;
Pred. No. 4.7;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -> T (IN REF. 2).
-> K (IN REF. 2).
7E1F0AFD4091E7C5
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                                                                                                                                                                                                                                                                                                                                                                          337
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                                                   3-phosphate
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the European Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entitles requires a license agreement (See http://www.isb-sor send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; AF288134; AAN76496.1; -.
InterPro; IPR006424; GAPDH-I.
InterPro; IPR006173; GAP_dhdrogenase.
Pfam; PF00044; gpdh; 1.
Pfam; PF02800; gpdh; 1.
Ppfam; PF02800; gpdh; 1.
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PROSITE; PS00071; GAPDH; 1.
Glycolysis; Oxidoreductase; NAD.
GLY
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P53271;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRINTS; PR00078;
                                                                                                                                                                                                                                         unknown open reading frames, of Ty and three tRNA genes.", Yeast 13:171-176(1997).
                                                                                                                                                                                                                                                                Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                              SEC35 protein.
SEC35 OR YGR120C OR G6324.
                                                                                                                                                                      Golgi
                                                                                                                                                                                                                                                                                                STRAIN=S288c / FY1679;
MEDLINE=97197982; PubMed=9046098;
                                                                                                                                                                                                                                                                                                                                                                                                                      28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                               01-OCT-1996
                                                                   Dev.
                                                                                          Whyte J.R., Munro S.; "The Sec34/35 Golgi transport complex is related to "The Sec34/35 Golgi transport complex in multiple
                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=4932;
                                                                                                                                                                                                                                                                                                                                                             Saccharomycetales;
                       MEDLINE=21563418; PubMed=11703943; Whyte J.R., Munro S.;
                                                                                                                                                                                              VanRheenen
                                                                                                                                                                                                         MEDLINE=98270888;
                                                                                                                                                                                                                     FUNCTION, AND SUBCELLULAR LOCATION
          ÷
                                                                                       defining a family of
                                                                                                                                      SUBUNIT
                                                        -!- FUNCTION: Required
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                                                                                                                                                             Cell Biol.
          eight different proteins.
SUBCELLULAR LOCATION: Membrane-associated
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TIGR01534; GAPDH-I; 1.
                                                         1:527-537(2001).
ION: Required for
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                                                                                                                                                                                  S.M., Cao X., Lupashin V.V., novel peripheral membrane pro
                                                                                                                                                                                                                                                                                                                                                                                                                  (Rel. 34, Created)
(Rel. 34, Last seq
(Rel. 41, Last ann
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                                                                                                                                                             docking.";
141:1107-1119(1998)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                          PubMed=9606204;
                                                                                                                                                                                                                                                                                                                                                              Saccharomycetaceae;
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                                                                                                                                                                                                                                                                                                                                                                                                                  sequence update)
annotation update)
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                                    Sec34/Sec35 complex
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                                                         Golgi vesicle
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chromosome VII carries
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    noved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                       protein,
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5.7;
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otein, is required
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                                                             docking.
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GO; GO:0017
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GO; GO:0006
GO; GO:0006
GO; GO:0000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             G3P_CHLPN
G3P_CHLPN
G3P_CHLPN
G9Z7T0; Q9UQH7;
30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-MAY-2000 (Rel. 41, Last annotation update)
28-FEB-2003 (Rel. 41, Last annotation update)
G1yccraldehyde 3-phosphate dehydrogenase (EC
GAP OR GAPA OR CPN0624 OR CP0123.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL; X83099; CAA58155.1; -. EMBL; Z72905; CAA97130.1; -.
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                    Shirai M., Hirakawa H., Kimoto M., Tabuchi M., Kish Shiba T., Ishii K., Hattori M., Kuhara S., Nakazawa "Comparison of whole genome sequences of Chlamydia from Japan and CWL029 from USA.";
Nucleic Acids Res. 28:2311-2314(2000).
                                                                                                                                                                          pneumoniae AR39.";
Nucleic Acids Res. 28:1397-1406(2000)
                                                                                                                                                                                                                                                          MEDLINE=20150255; PubMed=10684935;
Read T.D., Brunham R.C., Shen C., Gill S.R., H
White O., Hickey E.K., Peterson J., Utterback
Linher K., Weidman J., Khouri H., Craven B., B
Gwinn M., Nelson W., DeBoy R., Kolonay J., McC
                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=99206606; PubMed=10192388;
Kalman S., Mitchell W., Marathe R., Lammel C., F
Kalman S., Grimwood J., Davis R.W., Stephens R.
Olinger L., Grimwood J., Davis R.W., Stephens and
"Comparative genomes of Chlamydia pneumoniae and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chlamydia pneumoniae (Chlamydophila pneumoniae).
Bacteria; Chlamydiae; Chlamydiales; Chlamydiaceae;
NCBI_TaxID=83558;
                                                                                                                                                                                                                                            Eisen
                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                         MEDLINE=20330349; PubMed=10871362;
                                                                                                                                                          SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; $55978; $55978.
; $6003352; $EC35.
G0:0017119; C:Golgi transport complex; IPI.
G0:0000300; C:peripheral membrane protein of membrane
G0:0005625; C:soluble fraction; IDA.
G0:0005525; F:protein binding activity; IPI.
G0:0065888; P:ER to Golgi transport; IGI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     217
                                                                                                                                                                                                       M., Nelson W., DeBoy R., Kolonay J., J., Fraser C.M.; me sequences of Chlamydia trachomatis oniae AR39.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
7; Conser
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с ACTIVITY: D-glyceraldehyde 3-phosphate +
3-phospho-D-glyceroyl phosphate + NADH.
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50.0%;
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R.S.;
nd C. trachomatis.";
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y K., Bass
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PIR; B85568; B86568.
HSSP; P06977; IGAD.
PHCI-2DPAGE; Q9Z7TO; -.
TIGR; CP0123; -.
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TIGRFAMs; TIGRO1534; GAPDH-I;
PROSITE; PS00071; GAPDH; 1.
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InterPro; IPR006424; GAPDH-I.
Pfam; PF000044; gpdh; 1.
Pfam; PF02800; gpdh C; 1.
Pfam; PF02800; gpdh C; 1.
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EMBL; AE002173; AAF38006.1; -.
EMBL; AP002547; BAA98831.1; -.
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01-NOV-1997 (Rel. 35, Last sequence update)
01-NOV-1997 (Rel. 41, Last annotation update)
Salicylate biosynthesis isochorismate synthase
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SEQUENCE FROM N.A.
STRAIN=ATCC 15692 / PAO1;
MEDLINE=20437337; PubMed=10984043;
Stover C.K., Pham X.-Q.T., Erwin A.
Hickey M.J., Brinkman F.S.L., Hufne
                                                                                                                                                                                                     Serino L., Reimmann C., Baur H., Beyeler M., V
"Structural genes for salicylate biosynthesis
Pseudomonas aeruginosa.";
Mol. Gen. Genet. 249:217-228(1995).
                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
STRAIN=ATCC 15692 / PAO1;
MEDLINE=96086939; PubMed=7500944;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=287;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pseudomonas aeruginosa.
Bacteria; Proteobacteria; Gammaproteobacteria;
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SUBUNIT: Homotestramer (By similarity)
SUBCELLULAR LOCATION: Cytoplasmic.
SIMILARITY: Belongs to the glyceralde
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Hufnagle
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W.O., Kowalik
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EMBL; AE004840; AAG07619.1; -.
FIR; S60203; SS8229.
InterPro; IPR005801; Anth synth_chor.
InterPro; IPR005861; Isochor syn.
Pfam; PF00425; Chorismate bind; 1.
ProDom; PD000779; Anth synth_chor; 1.
TIGREAMS; TIGR0543; isochor syn; 1.
TIGREAMS; TIGR0543; isochor syn; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -!- CATALYTIC ACTIVITY: Chorismate = isochorismate.
-!- PATHWAY: Salicylic acid biosynthesis.
-!- SIMILARITY: BELONGS TO THE ISOCHORISMATE SYNTHASE FAMILY.
                                                                                                                                                                                                                                                Isomerase; Complete proteome.
SEQUENCE 476 AA; 52071 MW; D0F6AFD9CDCF9CF5 CRC64;
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Conservative

Similarity

100.0%; Score 119; DB 2; 100.0%; Pred. No. 5.2e-10; Live 0; Mismatches 0;

Length 1475; Indels

0;

Gaps

A;Residues: Î-171,173-641,'N',643- A;Experimental source: strain GS-5 C;Superfamily: cpl repeat homology F;1096-1115/Domain: cpl repeat hom F;1224-1243/Domain: cpl repeat hom F;1289-1308/Domain: cpl repeat hom F;1354-137/Domain: cpl repeat hom F;1419-1438/Domain: cpl repeat hom F;1419-1438/Domain: cpl repeat hom	A; Status: preliminary; A; Molecule type: DNA	R;Shiroza, T.; Ueda, S.; Kuram submitted to the Protein Seque: A;Reference number: A33128 A;Accession: A33128	A; Residues: 1-1475 A; Cross-references:	A;Accession: B33135 A;Status: preliminary A;Molecule type: DNA	J. Bacteriol. 169, 4 A;Title: Sequence an A;Reference number:	R;Shiroza, T.; Ueda,	C;Date: 23-Oct	RESULT 1 B33135 gtfB protein		ហ	44) K) H	0	39 45	7 0 ~	3 00	σ,) 4	νĸ	۱ (0	
ues: Î-171,173 imental source family: cpl re li15/Domain: c l1243/Domain: c l373/Domain: c l373/Domain: c	eliminary ype: DNA	C.; Ueda, the Protinumber: A number: A : A33128	1-1475 <shi>rences: GB:M</shi>	n: B33135 preliminary type: DNA	. 169, 4263-4270, uence analysis of number: A33135; M	.; Ueda,	ct-1990 #sequen R33135: A33128	precursor		37.		ى د د د	37.	37.	45 37.8	٠ ١٦.	37.	37.	37.	ں بر 000	ນ (ມ ວິດ ວິ	38.	
173-641, 'N', 643- cres: strain GS-5 repeat homology cpl repeat hom cpl repeat hom cpl repeat hom cpl repeat hom	not	S.; Kuramitsu, tein Sequence D A33128	HI> B:M17361;		, 4263-4270, 1 analysis of t r: A33135; MUI	S.; Kuramitsu,	Oct-1990 #sequence_revision R33135: A33128	r - Strept			331 1										7.7		
143-1475 <sh2> 198-5 1994 homology <cp1> homology <cp2> homology <cp3> homology <cp4> homology <cp4></cp4></cp4></cp3></cp2></cp1></sh2>	compared with conce	H.K. atabase,	g153639;		tfB gene 308013;	tsu, H.K.	evision 23-Oct-	Streptococcus mutans	ALIGNMENTS	Н90939	DEECG3	000178	H83332	T43461	AF1380	AG1749	D95905	S62732	B95908	E81786	AEJ149	813	
	conceptual translation	September 1990	PIDN:AAA88588.1; PID:g153640		from Streptococcus mutans. PMID:3040685		-1990 #text_change 15-Oct-1999		S	. W	glyceraldehyde-3-p	glyceraldehyde-3-p	conserved hypother	probable phosphodi	glycosidase homolo	glycosidase homolo	conserved hypothet	guanidinoacetate N	hypothetical prote	conserved hypothet	grycosyrcramsteras	hypothetical prote	

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R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Hacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene
A;Reference number: A33135, MUID:87308013; F
A;Accession: C33135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             glucosyltransferase precursor - Streptococcus sobrinus
C;Species: Streptococcus sobrinus
C;Date: 28-Aug-1992 #sequence_revision 28-Aug-1992 #text_change 15-Oct-1999
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F;1126-1145/Domain: cpl repeat homology <CPl>
F;1253-1272/Domain: cpl repeat homology <CP2>
F;1318-1337/Domain: cpl repeat homology <CP3>
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C;Keywords: duplication; glycosyltransferase; hexosyltransferase
F;1-34/Domain: signal sequence #status predicted <SIG>
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                                                                                                                                                                    RESULT 4
A41483
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A; Residues: 1-349 <SHI>
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A; Title: Peptide sequences for sucrose splitting and glucan binding within Streptococcus
A; Reference number: A38175; MUID:91123227; PMID:1704006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Accession:
                          glucosyltransferase (EC 2.4.1.-) gtfS precursor - C;Species: Streptococcus sobrinus C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 C;Accession: A41483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R; Abo, H.; Mtsumura, T.;
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A; Residues: 1-1592 < ABO>
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R;Gilmore,
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   Russell,
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                                                           #sequence_revision 30-Jun-1992
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95.2%;
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   R.R.B.;
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Pred. No. 1.2e-08
0; Mismatches
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   Ferretti, J.J
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                                                                       #text_change 15-Oct-1999
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A; Gene: gtfS
C; Superfamily
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A; Residues: 1-136
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A; Title: Analysis of the Streptococcus downei gtfS gene,
A; Reference number: A41483; MUID:90316665; PMID:2142479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 F;1127-1146/Domain: cpl repeat homology <CP2>
F;1192-1211/Domain: cpl repeat homology <CP3>
F;1277-1276/Domain: cpl repeat homology <CP4>
F;1277-1297/Domain: cpl repeat homology <CP5>
F;1321-1340/Domain: cpl repeat homology <CP8>
F;1341-1361/Domain: cpl repeat homology <CP6>
F;1341-1361/Domain: cpl repeat homology <CP6>
F;1385-1404/Domain: cpl repeat homology <CP7>
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J. Gen. Microbiol. 136, 2099-2105, 1990
A;Title: Nucleotide sequence of the Streptococcus mutans A;Reference number: A45866; MUID:91100958; PMID:2148600
A;Accession: A45866
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexos
F;181-201/Domain: cpl repeat homology
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C;Date: 30-Sep-1993 #sequence_revision
C;Accession: A48866
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                                                                                                           C;Accession: T31098
R;Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, R;Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, FEMS Microbiol. Lett. 159, 307-315, 1998
A;Title: Cloning and sequencing of a gene coding for an A;Reference number: Z20981; MUID:98164374; PMID:9503626
A;Recession: T31098
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                                                                                                                                                                                                                                               probable dextransucrase (BC 2.4.1.5), extracellular - Leuconostoc mesenteroides C;Species: Leuconostoc mesenteroides C;Date: 22-Oct_1999 #sequence_revision 22-Oct-1999 #text_change 11-May-2000
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A; Experimental source: strain NRRL C; Genetics:
                                     A; Molecule type: DNA
A; Residues: 1-1508 < MON>
A; Cross-references: EMBL: AF030129;
                                                                                              A;Status: preliminary; translated from GB/EMBL/DDBJ
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Keywords: glycosyltransferase;
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15; Conserv
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ferase; hexosyltransferase
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71.4%;
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71.4%;
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Pred. No.
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Pred. No. 0.
                          NID:g2766611; PID:g2766612; PIDN:AAB95453.
B-1299
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Juncosyltransferase - Streptococcus salivarius
C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999
C;Accession: T30857
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C;Function:
A;Description: produces dextran composed only of alp
C;Keywords: glycosyltransferase; hexosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030 A;Accession: T30857
                                                                                                                                                                                                                                                                                                                                                                                    glucosyltransferase N - Streptococcus salivarius (fragment) C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_ch C;Accession: T30552 R;Jaffe, R.I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: DNA
A; Residues: 1-1449 <SIM>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R;Simpson, C.L.; Giffard, P.M.; Jacques, N.A. Infect. Immun. 63, 609-621, 1995
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                                                                                                                                                                                                                                                                                                                                                       R;Jaffe, R.I.
submitted to the EMBL Data Library, February 1998
A;Description: Streptococcus salivarius V1477 gtf:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Status: preliminary; translated
glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-
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A; Accession: T30552
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A; Residues: 1-1449 < JAF>
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                                                                                                                                           HLSILEAWSDNDTPYLHD
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                                                                                                             HLSILEAWSHNDAYYNED
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66.7%;
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72.2%;
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    _revision 22-Oct-1999
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Pred.
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Pred. No.
                                                                                                                                                                                     Score 66; DB 2;
Pred. No. 0.092;
                                                                                                                                                                                                                                                                                                               from GB/EMBL/DDBC
                                                                                                                                                                                                                                                                  NID:g2935545; PID:g2935546; PIDN:AAC05156.1
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      #text_change 22-Oct-1999
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A44811
glucosyltransferase (EC 2.4.1.-) I - Streptococcus salivarius
G/Species: Streptococcus salivarius
G/Species: Streptococcus salivarius
G/Spate: 31-Dec-1993 #sequence revision 31-Dec-1993 #text_change 15-Oct-1999
G/Accession: A44811, S22726; S28809
R/Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
J. Gen. Microbiol. 137, 2577-2593, 1991
A/Title: Molecular characterization of a cluster of at least two glucosyltransferase gene
A/Reference number: A44811; MUID:92148377; PMID:1838391
A/Accession: A44811
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A;Title: Streptococcus sallvarius ATCC 25975 possesses at least two A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Accession: T30858
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A;Residues: 1-1518 <GIF>
A;Cross-references: EMBL:Z11873; NID:g47526; PIDN:CAA77900.1;
A;Cross-references extracted from NCBI backbone (NCBIN:81050, NC
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A; Residues: 1-1577 <SIM>
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                                                                                                                                                                                          R;Hannaert, V.; Blaauw, M.; Kohl, L.; Allert, S.; Opperdoes, Mol. Biochem. Parasitol. 55, 115-126, 1992
A;Title: Molecular analysis of the cytosolic and glycosomal A;Reference number: A48445; MUID:93063042; PMID:1435864
A;Accession: B48445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             k;Gene: gtfU
c;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyl
F;1307-1326/Domain: cpl repeat homology
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                                                                       A,Molecule type: DNA

A,Residues: 1-331 <-RAN

A,Cross-references: EMBL:X65220; NID:99552;

C,Superfamily: 9lyceraldehyde-3-phosphate de

C;Keywords: oxidoreductase
                                                                                                                                                                                                                                                                                          glyceraldehyde-3-phosphate dehydrogenase (phosphorylating) (EC 1.2.1.12) - C;Species: Leishmania mexicana C;Date: 31-Dec-1993 #Bequence_revision 31-Dec-1993 #text_change 03-Jun-2002 C;Accession: B48445; S25142
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B48445
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C; Genetics:
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mes 10; Conserv
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                      47.9%;
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Pred. No. 0
    Score 57; DB
Pred. No. 0.4;
2; Mismatches
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Pred. No.
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                                                                                                                          PIDN:CAA46323.1;
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NCBIP:81052)
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RESULT 12
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submitted to the EMBL Data Library, March 1992
A;Reference number: S22726
A;Accession: S22737
                                        A;Gene: SnbDE
C;Superfamily: acyl carrier protein homology; acetate-CoA ligase homology
C;Superfamily: acyl carrier protein; phosphopantetheine; phosphoprotein
P;511-951/Domain: acetate-CoA ligase homology <ACL1>
P;551-951/Domain: acyl carrier protein homology <ACP1>
F;1563-2024/Domain: acetate-CoA ligase homology <ACP2>
F;2399-2467/Domain: acyl carrier protein homology <ACP2>
F;2399-2467/Domain: acyl carrier protein homology <ACP2>
F;2995-3427/Domain: acyl carrier protein homology <ACP3>
F;4043-4492/Domain: acyl carrier protein homology <ACP3>
F;4043-4492/Domain: acyl carrier protein homology <ACP4>
F;4507-4575/Domain: acyl carrier protein homology <ACP4>
F;4507-4575/D
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R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least the A;Reference number: A44811; MUID:92148377; PMID:1838391
A;Accession: S28810
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C;Species: Streptomyces pristinaespiralis
C;Date: 02-Sep-2000 #sequence_revision 02-Sep-2000 #text_change 01-Dec-2000
C;Accession: T30289
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F;1456-1475/Domain: cpl repeat homology
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A; Residues: 1-51 <GIF>
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A;Description: Streptogramin B biosynthesis in Streptomyces pristinaespiralis a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Cross-references:
C;Genetics:
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Pred. No.
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5; Mismatches
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Length 4848;
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Query Match

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Search completed: November 13, Job time: 15.0379 secs

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R,Bevan, M.; Murphy, G.; Ridley, P.; Hudson, S.; Bancroft, I.; Mewes, H.W.; Rudd, submitted to the Protein Sequence Database, April 2000 A;Reference number: Z24493 A;Accession: T48610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   hypothetical protein F18022.160 - Arabidopsis thaliana C;Species: Arabidopsis thaliana (mouse-ear cress) C;Date: 20-Apr-2000 #sequence_revision 20-Apr-2000 #text_change 20-Apr-2000 C;Accession: T48610
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A; Residues: 1-347 <BEV>
                                                                                                                                                A; Note:
C; Superf
                                                                                                                                                                                                                                                                                                                                                                                              rf2 nuclear restorer protein - maize
N;Alternate names: aldehyde dehydrogenase homolog
C;Species: Zea mays (maize)
C;Date: 23-Apr-1999 #sequence_revision 23-Apr-1999 #text_change 11-May-2000
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A;Residues: 1-549 <CUI>
                                                                                                                                                                                                                                                                                              Science 272, 1334-1336, 1996
A;Title: The rf2 nuclear restorer gene of male-sterile T-cytoplasm maize.
A;Reference number: Z15177; MUID:96243131; PMID:8650543
A;Accession: T03983
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A; Introns: 232/3;
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                                                                                                                                                                                                                                                                                                                                                                                  C;Accession:
                                                                                                                              C;Superfamily: aldehyde dehydrogenase (NAD+); aldehyde dehydrogenase F;107-370/Domain: aldehyde dehydrogenase homology <\!ALD>
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                                                                   Conservative
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pe: strain B73
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58.8%; Pred. No. 11
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171.224 Million cell updates/sec
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sp_bacteria:*
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sp_unclassified:*
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                                                sp_rodent:*
sp_virus:*
sp_vertebrate:*
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sp_phage:*
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Compugen Ltd.
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB	ID	Description
1	108	90.8	1590	νį	Q59983	Q59983 streptococc
N	108	90.8	1590	N	Q55263	Q55263 streptococc
w	78	ნ წ. წ	1338	N	Q9WXJ4	Q9wxj4 streptococc
Α.	76	63.9	1016	N	Q9LCJ7	Q91cj7 leuconostoc
ŲΊ	74	62.2	1477	N	Q9L466	Q91466 leuconostoc
Φ	74	62.2	1508	N	Q9EZH5	Q9ezh5 leuconostoc
7	74	62.2	1508	N	052224	052224 leuconostoc
в	73	61.3	1575	N	Q9LCH3	Q91ch3 streptococc
9	73	61.3	1577	N	Q54178	Q54178 streptococc
10	71	59.7	1527	N	Q9ZAR4	Q9zar4 Leuconostoc
11	71	59.7	1527	N	Q8KRE1	
12	69	58.0	2835	N	Q8G9Q2	Q8g9q2 leuconostoc
13	66	55.5	1449	N	068542	
14	66	55.5	1449	N	Q55264	
15	63	52.9	1554	N	Q8KZL5	
16	63	52.9	1577	N	Q55265	Q55265 streptococc

45	44	43	42	41	40	39	3 B	37	36	35 5	3 4	33	32	3	30	29	28	27	26	25	24	23	22	21	20	19	18	17
47.5	47.5	47.5	47.5	47.5	48	48.5	48.5	49	49	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	50	50	50	51	51	52	55. 5	57	58	60	
						40.8						41.6			41.6					42.0						8	50.4	52.1
549	534	534	519	214	490	283	283	797	601	549	549	547	129	56	55	55	ភូ	347	339	305	435	424	4848	282	1599	1518	2057	1512
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Q9LLR2	Q94C67	Q8S528	Q9ZUB6	Q8C1P7	006579	Q8WSF4	Q9VIP7	Q98P32	005566	Q43274	Q94G64	QBLST4	Q94FX6	Q94FX8	Q93WH7	Q93VN4	Q94FX9	Q9LY92	Q949T9	QBLDL1	Q9LU68	Q94JU7	007944	Q8RVW3	Q00599	Q00600	Q9RE05	Q9WXJ5
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(X MEDLINE=94146405; PubMed=8312602;
RX MEDLINE=94146405, PubMed=8312602;
RX MEDLINE=94146405, PubMed=8312602;
RX MEDLINE=94146405, Anizawa Y., Isobe Y., Katayama T.;
RA Sato S., Inoue M., Handa N., Aizawa Y., Isobe Y., Katayama T.;
RX Sato S., Inoue M., Handa N., Aizawa Y., Isobe Y., Katayama T.;
RX Sato S., Inoue M., Handa N., Aizawa Y., Isobe Y., Katayama T.;
RX Streptococcus sobrinus.";
RX Streptococcus sobrinus.";
RX INA Sequence of the glucosyltransferase, Signal, Transferase.
RXW Glycosyltransferase; Signal; Glycosyltransferase.
RXW Glycosyltransferase; Signal; Signal; Signal; Signal; Signal; Signal; Si
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Q59983;
Q1-NOV-1996 (TrEMBLrel. 01, Created)
Q1-NOV-1996 (TrEMBLrel. 01, Last sequence update)
Q1-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Q1ucosyltransferase-I precursor (EC 2.4.1.5).
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85.7%;
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Pred. No. 5.5e-08;
3; Mismatches 0
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Q55263;
01-NOV-1996
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Q9WXJ4;
01-NOV-1999
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EMBL; D63570; BAA09792.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A. STRAIN-ATCC 33478;
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GLUCOSYLTRANSFERASE
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InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW_binding_I; 15.
Pfam; PF02324; Glyco hydro_70; 1.
SEQUENCE 1590 AA; 176058 MW; 9DF
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SEQUENCE
                                                                                             Pfam;
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                                                                                                  "S.cricetus glucosyltransferase (gtfS and gtfT) submitted (MAR-1999) to the EMBL/GenBank/DDBJ (BMBL, AB026123; BAA77236.1; -
INTERPRO, IPRO02479; CW binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 10.
Pfam; PF01473; CW binding_1; 10.
Pfam; PF02324; Glyco_hydro_70; 1.
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NCBI_TaxID=1333;
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Plasmid pAM1
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Pred. No. 5.5e-08;
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Pred. No. 0.00
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Matches 13
                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.

(c) STRAIN=NRRL B-1355;

(A) Arguello-Morales M.A., Remaud-Simeon M., Pizzut S., Sarcabal P.,

(A) Arguello-Morales M.A., Remaud-Simeon M., Pizzut S., Sarcabal P.,

(A) Willemot R.M., Monsan P.;

(B) Willemot R.M., Monsan P.;

(B) Sequence analysis of the gene encoding alternansucrase, a sucrose of sequence analysis of the gene encoding alternansucrase, a sucrose of sucrosyltransferase. To the EMBL/GenBank/DDBJ databases.

(B) Submitted (OCT-1999) to the EMBL/GenBank/DDBJ databases.

(C) Submitted (OCT-1999) to the EMBL/GenBank/DDBJ
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STRAIN=NRRL B-512F;
STRAIN=RRL B-512F;
MEDLINE=20169623; PubMed=10705445;
Mizuno K., Takahara H., Koba
"Gene encoding a dextransucrase-like pu
mesenteroides NRRL B-512F,";
Biosci. Biotechnol. Biochem. 64:29-38(2)
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Pfam; PF02324; Glyco_hydro_70; 1.
SEQUENCE 1016 AA; 110344 MW; 889
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Bacteria; Firmicutes; Lact
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P06278; 1VJS.
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Pred. No.
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                                                                                                                                         Score 74;
Pred. No.
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DT 01-0
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DT 01-0
DT Gluc
GN DSRB
OS Leuc
OC Bact
OC NCBI
RN [1]
RP SEQU
RC STRJ
RN [1]
RP STRJ
RN [1]
RP FEME
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RT dext
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O52224,

O52224,

O1-UNN-1998 (TrEMBLrel. 06, Created)

O1-UNN-1998 (TrEMBLrel. 06, Last sequence update)

O1-OCT-2002 (TrEMBLrel. 22, Last annotation update)

O1-OCT-701+ ransferase (EC 2.4.1.5).
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InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 14.
Pfam; PF021224; Glyco hydro_70; 1
SEQUENCE 1508 AA; 168542 MW; E2F
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Submitted (AUG-2000) to the
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01-MAR-2001 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
STRAIN=B-742CB;
Kim H.-S., Kim D., Ryu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI
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InterPro; IPR003318; Glyco.hydro_70.
InterPro; IPR003318; Glyco.hydro_70.
Infam; PF01473; CW_binding_1; 14.
Pfam; PF02324; Glyco.hydro_70; 1.
Glycosyltransferase; Transferase.
SEQUENCE 1508 AA; 168511 MW; E70
                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN-NRRL B-1299;
STRAIN-NRRL B-1299;
Monchois V., Remaud-Simeon M., Monsan P., Willemot R.M.;
Monchois V., Remaud-Simeon M., Monsan P., Willemot R.M.;
"Cloning and sequencing of a gene coding for an extracellular
"Cloning and sequencing of a gene coding for an extracellular
dextransucrase (DSRB) from Leuconostoc mesenteroides NRRL B-1299
dextransucrase (DSRB) a (1-6) glucan.";
FEMS Microbiol Lett. 0:00-0(1998).
EMBL; AF030129; AAB95453.1; ...
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=1245;
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Bacteria; Firmicutes; Lactobacillales; Leuconostoc
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66.7%;
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pides B-742CB, a de:
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EMBL/GenBank/DDBJ databases.
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0.012;
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                                                                                                                                                                                                                                                 Length 1508;
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           J. Bacteriol. 174:3577-3586(1992).

BMBL; U12643; AAC43483.1; -.

EMBL; M89776; AAA26969.1; -.

InterPro; IPR002479; CW_binding.

InterPro; IPR00318; Glyco hydro_70.

Pfam; PF01473; CW_binding_1; 18.

Pfam; PF02324; Glyco_hydro_70; 1.
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Q9LCH3;
01-OCT-2000
01-OCT-2000
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Q54178; Q54247;
Q1-NOV-1996 (Tre
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EMBL; AB025228; BAA95201.1; -.
InterPro; IPR002479; CW binding.
InterPro; IPR00318; Glyco hydro_70.
Pfam; PP01473; CW binding_1; 17.
Pfam; PP01473; CW binding_1; 17.
Pfam; PP02334; Glyco_hydro_70; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN=ATCC10557;
MEDLINE=20231779; PubMed=10768934;
Fujiwara T., Hoshino T., Ooshima T
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                                                                                                                                                                           Dev.
                                                                                                                                                                                                                                                                                                   Streptococcus
                                                                                                                                                                                                                                                                                                                          Glucosyltransferase.
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                                                                                    Sulavik M.C., Tardif G., Clewell D.B.; "Identification of a gene, rgg, which I glucosyltransferase and influences the gordonii Challis.";
                                                                                                                                                                                                                                                                              Streptococcus
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                                                                                                                                 STRAIN=CHALLIS;
MEDLINE=92276337; PubMed=1534326;
                                                                                                                                                      SEQUENCE OF 1-96 FROM N.A.
                                                                                                                                                                                       phase variants.";
                                                                                                                                                                                                MEDLINE=96157084; PubMed=8586195;
Vickerman M.M., Sulavik M.C., Clewell
"Molecular analysis of Streptococcus
                                                                                                                                                                                                                                   STRAIN=CHALLIS;
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InterPro; IPR003118; Glyco.hydro_70.
Pfam; PF01473; CW_binding_T; 16.
Pfam; PF021274; Glyco.hydro_70; 1.
SEQUENCE 1527 AA; 169709 MW; 1DF
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STRAIN=NRRL B-512-F;
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                                                           Neubauer H., Bauche A., Mollet B.;
"Isolation and characterization of the dextransucrase DsrD
"Isolation and characterization of the Leuconostoc mesenteroides Loc4.";
submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AY017384; AAG61158.1; -.
InterPro; IPR003479; CW binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW binding 1; 6.
Pfam; PF01473; GW binding 1; 6.
Pfam; PF02324; Glyco_hydro_70; 1.
Transferase; Glycoo_hydro_70; 1.
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"Molecular characterisation of DSR-E, synthesising dextransucrase with two J. Bacteriol. 184:5753-5761(2002).
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                                                                                                                                                                                                                                                                                                                                                          "Streptococcus salivarius Submitted (FEB-1998) to the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus salivarius.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glucosyltransferase
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                                                                                                                                                                                                       InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW binding_I; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                        Jaffe R.I.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=V1477;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                    EMBL; AF049609; AAC05156.1;
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Firmicutes; Lact
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                                  55.5%;
72.2%;
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                                                                                                                               159895
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                                                                                                                                                                                                                                                                                                                                                                                                  V1477 gtfN.";
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         ; Score 66; DB
; Pred. No. 0.21
0; Mismatches
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OC Bacte

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Matches 13
                     ESQUENCE FROM N.A.

SEQUENCE FROM N.A.

MEDLINE=21958684; PubMed=11960691;

Hanada N., Fukushima K., Nomura Y., Senpuku H., Hayakawa M.,

Hanada N., Fukushima K., Nomura Y.,

Mukasa H., Shiroza T., Abiko Y.;

"Cloning and nucleotide sequence analysis of the Streptococcus sobrinus gtfU gene that produces a highly branched water-soluble IT glucan.";

Eliochim. Biophys. Acta 1570:75-79(2002).

EMBL; AB089438; BAC07265.1; -.

EMBL; AB089438; BAC07265.1; -.

InterPro; IPR002479; CW_binding.

InterPro; IPR003318; Glyco_hydro_70.

Pfam; PF01473; CW_binding_1; 6.

Pfam; PF02324; Glyco_hydro_70; 1.
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"Streptococcus salivarius ATCC 25975 possesses at least two genes coding for primer-independent glucosyltransferases.";
Infect. Immun. 63:609-621(1995).
EMBL; L13495; AAC41412.1;
-.
InterPro; IPR002479; CW binding.
InterPro; IPR003118; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 8.
Pfam; PF02124; 61yco_hydro_70; 1.
Signal; Transferase
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Q55264;
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NCBI_TaxID=1304;
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01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
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QBKZL5;
Q1-QCT-2002 (TrEMBLrel. 22,
Q1-QCT-2002 (TrEMBLrel. 22,
Q1-MAR-2003 (TrEMBLrel. 23,
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SIGNAL 1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
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      Transferase.
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1449 AA; 159984 MW; DD62F07306E86A46 CRC64;
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1; Mismatches
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Perfect score:
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seq length: 2000000000
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Copyright (c) 1993 - 2003
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JT0345
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5770 5770
UH0511 UH0511 F82935 R80656 AG1889 B70204 G702197 G702197 B37802 S417270 S

ALIGNMENTS

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A;Molecule type: DNA
A;Residues: 1-1475 <SHI>
A;Cross-references: GB:M17361; NID:g153639; PIDN:AAA88588.1; PID:g153640
A;Cross-references: GB:M17361; NID:g153639; PIDN:AAA88588.1; PID:g153640
B;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
submitted to the Protein Sequence Database, September 1990
A;Reference number: A33128
A;Accession: A33128
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(;Species: Streptococcus mutans
(;Species: Streptococcus mutans
(;Species: Streptococcus mutans
(;Accession: B33135; A33128
C;Accession: B33135; A33128
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Reference analysis of the gtfB gene from Streptococcus mutans.
A;Reference number: A33135; MUID:87308013; PMID:3040685
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(/Superfamily: cpl repeat homology <CPl>
F/1096-1115/Domain: cpl repeat homology <CPl>
F/1224-1243/Domain: cpl repeat homology <CP2>
F/1289-1308/Domain: cpl repeat homology <CP3>
F/1354-1373/Domain: cpl repeat homology <CP4>
F/1419-1438/Domain: cpl repeat homology <CP5>
                     JT0345
dextransucrase (BC 2.4.1.5) precursor - Streptococcus mutans (strain GS-5)
N,Alternate names: sucrose 6-glucosyltransferase
c;Species: Streptococcus mutans
c;Date: 31-Mar-1992 #sequence revision 31-Mar-1992 #text_change 24-Sep-1999
C;Accession: JT0345; C33135
R;Jedda, S.; Shiroza, T.; Kuramitsu, H.K.
dene 69, 101-109, 1988
A;Reference analysis of the gtfC gene from Streptococcus mutans GS-5.
A;Reference number: JT0345; MUID:89137980; PMID:2976010
A;Accession: JT0345; MUID:89137980; PMID:2976010
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A; Residues: 1-171,173-641,'N',643-1475 <SH2>
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A; Molecule type: DNA
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19; Conserv
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Pred. No. 1
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A;Description: catalyzes the synthesis of both water-soluble and water-inscluble glucans C;Superfamily: cpl repeat homology C;Keywords: duplication; glycosyltransferase; hexosyltransferase F;1-34/Domain: signal sequence #status predicted <SIG>F;1-34/Domain: signal sequence #status predicted <SIG>F;35-1375/Product: glucosyltransferase #status predicted <MAT>F;1126-1145/Domain: cpl repeat homology <CPl>F;1126-1145/Domain: cpl repeat homology <CPl>F;1253-1277/Domain: cpl repeat homology <CPl>F;1126-1177/Domain: cpl repeat homology <CPl
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R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the 9tfB gene from Streptococcus mutans.
A;Reference number: A33135; MUID:87308013; PMID:3040685
A;Accession: C33135
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C;Date: 28-Aug-1992 #sequence_revision 28-Aug-1992 #text_change
C;Date: 38-Aug-1992 #sequence_revision 28-Aug-1992 #text_change
C;Accession: A38175
R;Abo, H.; Mtsumura, T.; Kodama. T. Ohio
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A; Residues: 1-349 <SHI>
A; Cross-references: GB:
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F;1318-1337/Domain:
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J. Bacteriol. 173, 989-996, 1991
A;Title: Peptide sequences for sucrose splitting and glucan binding within Streptococcu.
A;Reference number: A38175; MUID:91123227; PMID:1704006
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Matches 18
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probable dextransucrase (EC 2.4.1.5), e
C;Species: Leuconostoc mesenteroides
C;Date: 22-Oct-1999 #sequence_revision
C;Accession: T31098
R;Monchois, V.; Remaud-Simeon, M.; Mons
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Pred. No.
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Pred. No. 1.1e-05;
1; Mismatches 1
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                                                                                                         22-Oct-1999 #text_change
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6e-07;
                             P.; Willemot, R.M
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FEMS Microbiol. Lett. 159, 307-315, 1998
A;Title: Cloning and sequencing of a gene coding for an A;Reference number: Z20981; MUID:98164374; PMID:9503626
A;Accession: T31998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Residues: 1-1508 <MON>
A;Cross-references: EMBL:AF030129;
A;Experimental source: strain NRRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Status: preliminary; translated from GB/EMBL/DDBJ
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C;Species: Leuconostoc mesenteroides
C;Date: 07-Jul-1997 #sequence_revision 29-Aug-1997 #text_change 29-Aug-1997
C;Accession: JC5473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gene 182, 23-32, 1996
A;Title: Cloning and sequencing of a gene coding for a novel dextransucrase A;Reference number: JC5473; MUID:97136686; PMID:8982063
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C;Accession: JC5473 R;Monchois, V.; Willemot, R.M.; Remaud-Simeon, M.; Croux, C.; Monsan,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Molecule type: DNA
A;Residues: 1-1290 <MON>
A;Cross-references: GB:UJ8181
C;Comment: This enzyme catalyzes the transfer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Keywords: glycosyltransferase; hexosyltransferase F;78-870/Domain: catalytic \#status predicted <CAT>F;922-1290/Domain: glucan-binding \#status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Gene: dsrA
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                                                                                                                                Infect. Immun. 58, 2452-2458, 1990
A;Title: Analysis of the Streptococcus downei gtfS gene,
A;Reference number: A41483; MUID:90316665; PMID:2142479
                                                                                                                                                                                                                 glucosyltransferase (EC 2.4.1.-) gtfS precursor - 9 C;Species: Streptococcus sobrinus C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992
 A; Gene:
C; Superf
C; Keywor
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                                                                 A;Molecule type: DNA
A;Residues: 1-1365 <GTL>
A;Cross-references: GB:M30943;
                                                                                                                                                                                     R; Gilmore, K.S.;
                                                                                                                                                                                                       C; Accession:
                                                                                                                 A; Accession: A41483
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Best Local S
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;Superfamily: cpl repeat homology;Keywords: glycosyltransferase; h
                                                     Genetics:
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                                                                                                                                                                                            R.R.B.; Ferretti,
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                                                                            NID:g153652;
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Pred. No.
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B-1299
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Pred. No 6.2e-05;
              hexosyltransferase
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5e-05;
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                                                                                PIDN:AAA26898.1;
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                                                                                                                                                                                                                                                                     Streptococcus
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F;1127-1146/Domain: cpl repeat he F;1127-1214/Domain: cpl repeat he F;1257-1276/Domain: cpl repeat he F;1277-1297/Domain: cpl repeat he F;1277-1297/Domain: cpl repeat he F;1321-1346/Domain: cpl repeat he F;1341-1361/Domain: cpl repeat he F;1345-1361/Domain: cpl repeat he F;1345-1404/Domain: cpl repeat he
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A45866
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A;Residues: 1-1431 <HON>
A;Residues: 15-1431 <HON>
A;Cross references: GB:M29296
C;Superfamily: cpl repeat homology
C;Keywords: 9lycosyltransferase; hexos
F;181-201/Domain: cpl repeat homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            R;Honda, O.; Kato, C.; Kuramitsu, H:K.
J. Gen. Microbiol. 136, 2099-2105, 1990
A;Title: Nucleotide sequence of the Streptococcus mutans gtfD gene encoding the glucosyl A;Reference number: A45866; MUID:91100958; PMID:2148600
A;Accession: A45866
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C;Species: Streptococcus mutans
C;Date: 30-Sep-1993 #sequence_revision 30-Sep-1993 #text_change 07-May-1999
C;Accession: A45866
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                                                                                                                                                                                                                                                                                                                                                            glucosyltransferase - Streptococcus salivarius
C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999
C;Accession: T30857
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A;Molecule type: DNA
A;Residues: 1-1449 <SIM>
                                                                                                                                                                                                                                                              Infect. Immun. 63, 609-621, 1995
A;Title: Streptococcus sallvarius ATCC 25975 possesses at least two genes coding for pri
A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Accession: T30857
                                                                                                                                                                                                                                                                                                                                        R; Simpson, C.L.; Giffard, P.M.; Jacques, N.A.
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Best Local Similarity
Matches 11; Conserv
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NYAFVRAHDSEVQSII 624
                                    SYSFIRAHDSEVQDLI 18
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78.9%;
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76.5%;
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t homology <CP5>
t homology <CP8>
t homology <CP8>
t homology <CP6>
t homology <CP7>
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Pred. No. 0.000
1; Mismatches
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Pred. No. 0.017;
2; Mismatches
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Pred. No.
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RESULT

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R;Jaffe, R.I.
R;Jaffe, R.I.
submitted to the EMBL Data Library, February 1998
A;Description: Streptococcus salivarius V1477 gtfl
A:Reference number: Z20854
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C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999
C;Accession: T30552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             glucosyltransferase (EC 2.4.1.-) I - Streptococcus salivarius C;Species: Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 31-Dec-1993 #sequence revision 31-Dec-1993 #text_change 1 C;Accession: A44811; S22726; S28809 R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. U. Gen. Microbiol. 137, 2577-2593, 1991 A;Title: Molecular characterization of a cluster of at least two A;Reference number: A44811; MUID: 92148377; PMID:1838391 A;Accession: A44811; MUID: 92148377; PMID:1838391
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S22737
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C;Keywords: glycosyltransferase; hexosyltransferase
F;1307-1326/Domain: cpl repeat homology <CP4>
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A;Cross-references: EMBL:Z11873; NID:g47526; PIDN:CAA77900.1;
A;Note: sequence extracted from NCBI backbone (NCBIN:81050, NC
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A;Accession: T30552
                                                                                                                                                                                                                        glucosyltransferase (EC 2.4.1.-) S (5Species: Streptococcus salivarius C;Date: 16-Sep-192 #sequence revisi C;Accession: S22737; S28810; E44811;
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A;Molecule type: DNA
A;Residues: 1-159 < JAC's
A;Residues: 1-159 < JAC's
A;Cross-references: EMBL:Z11872; NID:g47530; PIDN:CAA77898.1;
A;Experimental source: ATCC 25975
A;Experimental source: ATCC 25975
C;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least t
                                                                                                                                                         C)Acques, N.
R,Jacques, N.
submitted to the EMBL Data
submitted to umber: S22726
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Best Local S
Matches 11
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Best Local
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Pred.
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Pred. No.
                                                                                                                                                                                                                                                                                           - Streptococcus salivarius
                                                                                                                                                                                       March 1992
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C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
F;1456-1475/Domain: cpl repeat homology <CPR>
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S46329
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C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999
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A; Residues: 1-51 <GIF>
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A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Accession: T30858
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A; Residues: 1-1577 <SIM>
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EMBO J. 13, 2625-2638, 1994
A;Title: Eight genes and alternative RNA processing pathways generate an unexpectedly A;Reference number: 846326; MUID:94283388; PMID:8013462
                                                                                                                                                                                                                                                                                                                                                  intermediate filament protein - Caenorhabditis elegans
C;Species: Caenorhabditis elegans
C;Date: 07-May-1995 #sequence_revision 21-Jul-1995 #text_change 20-Jun-2000
C;Accession: S46329
C;Accession: S46329
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A; Residues: 1-575 < DOD>
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12; Conservative
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                                                                                                                                          intermediate
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70.6%;
   259
                                                                                                                                             filament
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Pred. No. 0.029;
3; Mismatches
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Pred. No.
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Pred. No.
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protein Av71
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0.095;
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C;Species: Mycoplasma pulmonis
C;Date: 24-May-2001 #sequence_revision 24-May-2001 #text_change 03-Aug-2001
C;Accession: H90599
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Title: The complete genome sequence of the murine respiratory pathogen Mycoplasma A;Reference number: A99512; MUID:21267165; PMID:11353084
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           conserved hypothetical protein MYPU_7040 [imported] - Mycoplasma pulmonis (strain
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A;Genetic code: SGC3
C;Superfamily: conserved hypothetical protein MG139
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A;Experimental source: strain UAB CTIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                               R;Theologis, A.; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Kaul, Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Cansen, N.F.; Hughes, B.; Huizar, L.
Nature 408, 816-820, 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   probable RING zinc finger protein [imported] - Arabidopsis thaliana C;Species: Arabidopsis thaliana (mouse-ear cress) C;Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 31-Mar-2001
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A;Molecule type: DNA
A;Residues: 1-327 <STO>
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R; Theologis,
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185 YPFIRPHDNQDMDL 198
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                                     4 YSFIRAHDSEVQDL
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Pred. No. 12;
                                                                                                        Score 44;
Pred. No.
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Search completed: November 13, Job time: 12.7962 secs

2003, 09:50:22

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Minimum DB
Maximum DB
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SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1984.DAT:

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Query Query Query Query Query Query Atch Length DB ID Description 100.0 1475 23 AAU98027 100.0 1475 23 AAU98030 100.0 1475 23 AAU98031 100.0 1475 23 AAU98033 100.0 1475 23 AAU98033 100.0 1475 23 AAU98033 100.0 1475 23 AAU98035 100.0 1475 23 AAU98035 100.0 1475 23 AAU98039	Result Score M No. Score M 2 95 1 3 95 1 5 95 1 6 95 1 8 91
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36	ABP79431	ABB92189	σ.	AA002971	AAU60129	ABB98658	ABB98573	ABB98656	ABB98652	AAR91047	ABB98657	ABB98579	AAU98043	AAU98029	ABB98655	ABB98653	AAB10667	AAU74519	ABB98654	AAU98045	AAU98042	ABB98651	04	80	œ	ABB98650	AAU80055	AAR32925	80	AAU98037	AAU98036	AAU98034	AAU98032	AAU79284	AAU79288
Haemophilus influe	N. gonorrhoeae am	Herbicidally acti	Human reproductive	Human polypeptide	റ	Dextrane-saccharas	accharas	-sacchara	ne-sacchara	Alpha-D-glucosyltr	Dextrane-saccharas	Dextrane saccharas	. mutans	giucosy	extrane-s	Dextrane-saccharas	L. mesenteroides a	Lactobacillus reut	lara	mutans glucosyl	mutans	extrane-s	. mutans	S. mutans glucosyl	extran sa	Dextrane-saccharas	Leuconostoc mesent	Glucosyltransferea	. mutans	. mutans giuc	mutans	. mutans g		treptococc	treptococcus mut

ALIGNMENTS

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RESULT 1
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DT 27-J
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07-JUN-1995;
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16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S. mutans glucosyltransferase GTFB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27-AUG-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14-MAR-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                           19-DEC-2000; 2000US-0740274.
                                       (NICH/) NICHOLS S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                     98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                   98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      paper manufacture.
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AAU98030
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AC AAU9
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DE S. (
XX
CW
KW Glu
KW Glu
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XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The invention an isolated protein comprising a glucosyltransferase (C) (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D57TK, D567T,D57TK, K1014T, I448V/D457N, D567T,D57TK, D567T,D57TK, K1014T, I448V/D457N,D57TK, D567T,D57TK, K1014T, I448V/D457N,D57TK, D567T,D57TK, M71D/T59D, and CC Changes at positions from T589D, T59DE, M47D/T59DE, and CC W169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a vector comprising the polynucleotide operably linked to a compruse of the vector, a transgenic plant comprising the cell controduced with the vector, a transgenic plant comprising the continuous of the remaplement of the comprising and/or coating composition comprising a glucan produced in a plant transformed comprising the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where comprising the sproduced in the amyloplast and/or vacuole or a maize line comprising the glucan in starch biosynthesis, transformed with a gene encoding a comprising the glucan in a plant. The method comprises transforming a comprising the glucan in a plant. The method comprises transforming a comprising the vector, growing the plant and inducing expression of the colymnoleotide for a time sufficient to produce the glucan in the colymnoleotide for a time sufficient to produce the glucan in the colymnoleotide protein to voluce a transfer clant, and clucan colymnians at transfer clant, and clucan composition comprises transformed comprises transformed comprises transformed comprises transformed comprises transformed comprises transformed comprises 
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                                                                                                                                                                                                                                                                                                                             RESULT
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Best Local S
Matches 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; Page 21-25; 44pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        paper manufacture, comprises mutations in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents GTFB.
                                                                              Glucosyltransferase;
                                                                                                                               S. mutans
                                                                                                                                                                                27-AUG-2002
                                                                                                                                                                                                                                                                              AAU98030 standard; Protein; 1475
                                                      coating composition;
                                                                                                                                                                                                                                                                                                                                                                                                        552 VPSYSFIRAHDSEVQDLIA 570
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 VPSYSFIRAHDSEVQDLIA 19
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                               glucosyltransferase GTFB mutant
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                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AA,
                                                    GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
                                 paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%; Score 95; I
100.0%; Pred. No. 2
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                                       mutant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 23;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1475;
                                                                 molecule;
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11-DEC-1998;
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07-JUN-1995;
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16-JAN-1998;
16-JAN-1998;
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                                                                                                                                                                                                                                                        Misc-difference
                                                                                                                                                                                                                                      14-MAR-2002
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                                                                                                                                                                                          (NICH/) NICHOLS
                                                                                                                                                                                                 20-JAN-1998;
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98US-0008172.
98US-0009620.
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95US-0482711
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                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                             95US-0485243.
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                                                                                                                                                                                                                                                    /note= "Wild-type Ile substituted by Val"
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Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions ä useful

Claim 36; Page -; 44pp; English.

CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, J458N/D557T, D457N/D57TK, D567T/D57TK/K1014T, J458N/D557T, D457N/D57TK, D567T/D57TK/K1014T, J458N/D557T, D457N/D57TK, D567T/D57TK/K1014T, J458N/D557T, D457N/D57TK, D567T/D57TK/K1014T, J458N/D557T, D457N/D57TK, D567T/D57TK, CC D567T/D57TK/K1014T, J468V/D457N/D573N/D567T/D57TK, D567T/D57TK, CC D47N/T107N/T11A, and K779Q or a GTF D polypeptide having CC changes at positions from T89D, T89BE, M471D, N471D/T58D, and CA M71D/T58D. Also included are a glucan produced by the GTF mutant, CC an isolated polynuclectide which encodes P1 or P2, or its complementary CC polynuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC an isolated polynuclectide which encodes P1 or P2, or its complementary CC polynuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC an isolated polynuclectide with encoders plant, a paper sizing and/or vector, a seed or tuber from the transgenic plant, comprising the produced in a plant transformed continuous produced in the amyloplast and/or vector a latex, thermoplastic molecule or their combinations or glucan and starch historynthesis, transformed with a gene encoding a glucosynthesis, transformed with a gene encoding a cc plant starch biosynthesis, transformed with a gene encoding a cc plucosyltransferase B or D enzyme, wild-type or mutant and a paper cc thermoplasting the glucan in a plant. The method comprises transforming a plant real under plant glucan produce a plant cell under plant growing complexing the plucan in the plant cell under plant growing complexing and plucan in the plant cell under plant growing complexing the glucan produce the plant cell under plant growing complexing the glucan produce the plant and inducing expression of the polymuclectide for a time sufficient to produce a transgenic plant, and glucan comprises the plant produce a transgenic plant, and glucan produced plant and additions to modified starch discount in the present sequence in paper manufacture. information 'n claim

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RESULT 3
ANU98031
ID PANU9
XX ANU9
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XX ANU9
XX COAL
XX 
CC (GTF) B polypeptide having changes at position from I448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, K1014T, I448V/D457N, D567T/D571K, D
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-DEC-2000; 2000US-0740274.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (NICH/) NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   manufacture, comprises mutations in specific
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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Pred. No. 2.9e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTFB mutant D457N
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thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line combination or glucoses and the glucan is produced in the amyloplast and/or vacuole or a maize line comprises that in starch biosynthesis, transformed with a gene encoding a comprise glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a complication to produce a regenerated plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polymucleotide for a time sufficient to produce the glucan in the cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce a transit sequence from is produced in the amyloplast of potato or the vacuole of sugar beet. Clucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper commentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

Cunte: The present sequence is not shown in the specification but composition in claim 36.
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Best Local S
Matches 19
                                           11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                S. mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAU98033 standard; Protein; 1475 AA
                                                                                                                                                                      19-DEC-2000; 2000US-0740274
                                                                                                                                                                                                   14-MAR-2002
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                                                                                                                                                                                                                                                                             Misc-difference 1014
                (NICH/) NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                 glucosyltransferase GTFB mutant K1014T
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                                                                                                                                                                                                                                                                                                                                        mutans
                                           95US-0478704.
95US-0482711.
95US-0485243.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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Pred. No. 2.9e-08;
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RESULT 5
AAU98035
ID AAU9
XX
AC AAU9
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DT 27-A
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Gluc
KW Gluc
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Best Local S
Matches 19
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           D567T/D571K/K1014T, 1448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypoptide having changes at positions from T589D, T589E, N471D, N471D/T589B, and N471D/T589E. Also included are a glucan produced by the GTF mutant, N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polymucleotide which encodes P1 or P2, or its complementary polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polymucleotide operably linked to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   promoter, a vector comprising the expression cassette, host of introduced with the vector, a transgenic plant comprising the
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  paper manufacture, comprises mutations in specific positions
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPT; 2002-414332/44
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention
   coating composition;
                                                                                                   S. mutans
                                                                                                                                                              27-AUG-2002
                                 Glucosyltransferase;
                                                                                                                                                                                                                                                                                         AAU98035 standard; Protein; 1475 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                 552 VPSYSFIRAHDSEVQDLIA 570
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 present sequence is not shown in the specification but ed by the indexer using the GTFB sequence appearing as AAU98027 nformation in claim 36.
                                                                                            glucosyltransferase GTFB mutant D457N/D571K.
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                                                                                                                                                              (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; Score 95; DB 23; 100.0%; Pred. No. 2.9e-08;
   glucan;
      GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
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CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, X1014T, D457N/D565T, D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, 1448V/D457N/D567T/D571K/X70A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CX 169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CX 169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CX changes at positions from T589D. T589E, M471D, M471D/T599D, and CX M471D/T599E. Also included are a glucan produced by the GTF mutant, CX polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CX polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CX polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CX polymucleotide with the vector, a transgenic plant comprising the polymucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell conditions of their combinations or plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed control of the modern or their combinations or glucan and starch where CX elicitent in starch biosynchesis, transformed with a gene encoding a glucan in a plant. The vector is useful deficient in starch biosynchesis, transformed with a gene encoding a CX plant cyll with the vector, growing the plant cyll under plant growing a CX plant cyll where a regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from the plant and glucan sample the awayloplast of potato or the vacuole of sugar beet. CX plant produced in the awayloplast of potato or the vacuole of sugar beet. CX plant produced in the awayloplast of potato or the vacuole of sugar beet. CX plant produced in plant and glucan cX plant and glucan cX plant produced by produced by the plant and glucan cX plant produced by plant and plant and glucan cX plant plant a
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16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       amyloplast; vacuole; paper manufacture; mutant; mutein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19-DEC-2000; 2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US2002031826-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 36; Page -; 44pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           95US-0482711
95US-0485243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                95US-0478704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    98US-0210361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98US-0009620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98US-0007999
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98US-0008172
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ഗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note= "Wild-type Asp substituted by Lys"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               note= "Wild-type Asp substituted by Asn"
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RESULT 6
AAU98039
AC AAU9
AX AAU9
AX AAU9
AX 27-A
XX Gluc
KW Gluc
KW Coatt
KW Coatt
KW Coatt
KW Coatt
KW AAU9
AX XX
FFT Misc
PN 11-1
PP 11-1
P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SSSSS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, D457N/D567T, D457N/D567T/D571K, M1014T, M1648V/D457N, D567T/D571K/K719Q/K1014T, M1648V/D457N, M1648V/D457N, M1648V/D457N, M1648V/D457N, M1648V/M1648V, M1648V/M1648V, M1648V/M1648V, M1648V/M1648V, M1648V, M1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S. mutans glucosyltransferase GTFB mutant YYY169-171AAA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAU98039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-DEC-2000; 2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US2002031826-A1
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Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           552
                                                                                                                                                                                                                                                                                                                                                                                                                        36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ь
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VPSYSFIRAHDSEVQDLIA 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VPSYSFIRAHDSEVODLIA 570
                                                                                                                                                                                                                                                                                                                                                                                                                        Page -; 44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       position; glucan; starch; latex; thermoplast vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98US-0210361.
95US-0478704.
95US-0482711.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers 169..171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       note= "Wild-type Tyr-Tyr-Tyr substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                        English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
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Pred. No. 2.9e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               γģ
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
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RESULT 7
AAU98040
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CC introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, composition is produced in the amyloplast and/or vacuole or a maize line conditions is produced in the amyloplast and/or vacuole or a maize line comprising the glucan in a plant transformed with a gene encoding a comprising the glucan in a plant. The method comprises transforming a comprising the plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transforming a conditions to produce a regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from continuous biphosphate carboxylase small subunit, waxy, brittle-1 and conditions to produced in the amyloplast of potato or the vacuole of sugar beet. Clucans are useful as substitutes for and additions to modified starch candificative input materials that produce chemical effluents, paper manufacture. Unlike prior art techniques, which require input materials that produce day GTF, which utilises biologically produced input materials, is more cost-effective and convolutions to modified starch consideration the present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                   Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Seguence
                                                                                                                                                                                                                                                                                   Streptococcus Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                         S. mutans glucosyltransferase GTFB mutant K779Q
                                                                                                                                                                                                                                                                                                                                                                                                                                              27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAU98040 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    promoter, a vector comprising the expression cassette, host
                                                                                                         19-DEC-2000;
                                                                                                                                                                             US2002031826-AI
                                                                                                                                                                                                                                 Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 VPSYSFIRAHDSEVQDLIA 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VPSYSFIRAHDSEVQDLIA 570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1475 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                         2000US-0740274.
                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
                                                                                                                                                                                                                                 Location/Qualifiers 779
                                                                                                                                                                                                                /note= "Wild-type Lys substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein; 1475 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 95;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.9e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 1475;
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                                                                                                                                                                                                                  γd
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
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RESULT 8
AAU79285
ID AAU7
XX
AC AAU7
XX
AC 13-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Converges at positions from TSBUD, TSBUD, NAYLD/TSBUD, AND
CONTINUESBUD. Also included are a glucan produced by the GTF mutant,
CONTINUESBUD. Also included are a glucan produced by the GTF mutant,
CONTINUESBUD. Also included are a glucan produced by the GTF mutant,
CONTINUESBUD. A ribonucleotide which encodes Pl or P2, or its complementary
CONTINUESBUD. A ribonucleotide operably linked to a
promoter, a vector comprising the polymucleotide operably linked to a
promoter, a vector comprising the polymucleotide operably linked to a
promoter, a seed or tuber from the transgenic plant, a paper sizing and/or
coating composition comprising a glucan produced in a plant transformed
with a gene encoding the mutant GTF, wild type or, starch, a latex,
continues the glucan is produced in the amyloplast and/or vacuole or a maize line
continues the glucan (paper sizing/coating agent). The vector is useful
comprising the glucan in a plant. The method comprises transforming a
conditions to produce a regenerated plant and inducing expression of the
polymucleotide for a time sufficient to produce the glucan in the
corresponded in the amyloplast of potato or the vacuole of sugar beet.
conditions to paper manufacture. Unlike prior art techniques, which
correquire input materials that produce obscale for and additions to modified starch
correquire input materials that produce obscale filtents, paper
correquire input materials that produce obscale of the sugar beet.
correporties and impart does to the paper continues, which utilises
corrections and impart does to the paper and society effective and
corrections and impart does to the paper apper actions expression.
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                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D571K, D567T/D571K, D567T/D571K, D567T/D571K/K1014T, D567T/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
    13-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                        properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (NICH/) NICHOLS S
                                          AAU79285;
                                                                                 AAU79285 standard; Protein; 1017
                                                                                                                                                                                        552
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                                                                                                                                                                                                                                                                       19;
                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                        VPSYSFIRAHDSEVQDLIA 570
                                                                                                                                                                                                                        VPSYSFIRAHDSEVQDLIA 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Page -; 44pp;
                                                                                                                                                                                                                                                                                                                                                      1475
                                                                                                                                                                                                                                                                       Conservative
    (first entry)
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98US-0009620.
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                                                                                                                                                                                                                                                                                          100.0%;
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                                                                                                                                                                                                                                                                                        Score 95; DB 23;
Pred. No. 2 9e-08;
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Best Local &
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. 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyl transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This sequence represents a Streptococcus mutans monoclonal antibody-related
                                                                                                                                                Glucosyltransferase; coating composition; amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               04-OCT-2000; 2000JP-0304889.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            anti-caries; glucosyl transferase-B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Antibody;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus mutans monoclonal antibody-related protein #2
                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        04-OCT-2000; 2000JP-0304889
                                                                                                                                                                                               S. mutans glucosyltransferase GTFC.
                                                                                                                                                                                                                         27-AUG-2002
                                                                                                                                                                                                                                                                        AAU98028 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein.
                                                                                                                         Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (UYNI-) UNIV NIPPON
                                              19-DEC-2000; 2000US-0740274
                                                                         14-MAR-2002
                                                                                                  US2002031826-A1
                                                                                                                                                                                                                                                                                                                                    518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4; Page 17-19; 28pp; Japanese
                                                                                                                                                                                                                                                                                                                                                           1 VPSYSFIRAHDSEVODLI 18
                                                                                                                                                                                                                                                                                                                                                                                    18;
                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                     VPSYSFIRAHDSEVQDLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dental caries; water insoluble glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                   1017 AA;
                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                         (first entry)
   98US-0210361.
95US-0478704.
95US-0482711.
                                                                                                                                                                                                                                                                        Protein; 1375
                                                                                                                                                                                                                                                                                                                                                                                                95.8%;
100.0%;
                                                                                                                                                            GTFC; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
                                                                                                                                                 paper manufacture.
                                                                                                                                                                                                                                                                                                                                      535
                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                Score 91;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                     DB 23; I
. 1e-07;
ches 0;
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                                                                                                                                                                                                                                                                                                                                                                                                             Length 1017;
                                                                                                                                                                  molecule;
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RESULT 10
AAU79288
ID AAU79
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AC AAU79
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DT 13-AU
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                                                                                                                                                                                                                                                                                                                                                                                                  thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC for producing a glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant cell under plant growing CC conditions to produce a regenerated plant and inducing expression of the CC regenerated plant, where the vector contains a transit sequence from CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. CC Glucans are useful as substitutes for and additions to modified starch CC and latexes in paper manufacture. Unlike prior art techniques, which CC require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises to loologically produced input materials, is more cost-effective and CC environmentally friendly. Moreover, glucans also exhibit thermoplastic CC The present sequence represents GTFC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, M1014T, D457N/D567T, D457N/D571K, D567T/D571K, CD567T/D571K, K1014T, D457N/D567T, D457N/D57K, D567T/D571K, K1014T, T448V/D457N/D567T/D571K/K779Q/K1014T, CV169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, T589D, and CC (hanges at positions from T589D, T589E, N471D, T589D, and CC (hanges at positions from T589D, T589E, N471D, T589D, and CC (hanges at positioned which encodes P1 or P2, or its complementary CC an isolated polynucleotide which encodes P1 or P2, or its complementary CC an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the vector coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, where
                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                 Query Match
Best Local :
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16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Disclosure; Page 30-33; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nichols
  13-AUG-2002
                                            AAU79288;
                                                                                    AAU79288 standard; Protein; 1375 AA
                                                                                                                                                                                                                                                                                                                                                                 Sequence
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                                                                                                                                                                                          578
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                               18;
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                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                          VPSYSFIRAHDSEVQDLI
                                                                                                                                                                                                                                  VPSYSFIRAHDSEVODLI 18
                                                                                                                                                                                                                                                                                                                                                                 1375 AA;
                                                                                                                                                                                                                                                                               Conservative
  (first entry)
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98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                                   95.8%;
100.0%;
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                                                                                                                                                                                                                                                                                                   91;
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04-OCT-2000; 2000JP-0304889.

04-OCT-2000; 2000JP-0304889

(UYNI-) UNIV NIPPON

Streptococcus mutans

JP2002114709-A.

anti-caries; glucosyl transferase-B;

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17566) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
                                                                                                                                                                                                     Streptococcus mutans monoclonal antibody-related protein
                                                                                                                                                                                                                              13-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         inhibitive activity against water insoluble glucan synthetase of g
transferase-B. The monoclonal antibody specifically inhibits water
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disclosure; Page 22-25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            04-OCT-2000; 2000JP-0304889
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus mutans monoclonal antibody-related protein
                                                                                                                                                                            Antibody; dental caries; water insoluble glucan synthetase;
                                                                                                                                                                                                                                                                               AAU79284 standard; Protein; 1476
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                                                                                                                                                                                                                                                                                                                                                                                                18;
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                                                                                                                                                                                                                                                                                                                                               VPSYSFIRAHDSEVODLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     represents a Streptococcus mutans monoclonal antibody-related
                                                                                                                                                                                                                                                                                                                                                                                                                                                 1375 AA;
                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                            95.8%;
100.0%;
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Pred. No.
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le glucan synthetase of glucosyl
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                                                                                                               11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17566) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyl transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This
                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                              S. mutans glucosyltransferase GTFB mutant D567T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAU98032 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Anti-caries agent composed of a monoclonal antibody against an inhibitory enzyme against water insoluble glucan synthetase of glucosyl transferase-B (GTF-B) of Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2002-448101/48
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                                                                                                                                                                                                                                                                                                                                                       Streptococcus mutans Synthetic.
                                                                                                                                                                                                                                                14-MAR-2002
 Glucosyltransferase B or D protein useful for producing a glucan was substitutes for and additions to modified starch and latexes in
                                       WPI; 2002-414332/44
                                                                                                                                                                                                                        19-DEC-2000;
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                                                                                                                                                                                                                                                                                                                Misc-difference
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                                                                                           NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
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                                                                                                                                                        98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
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98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Protein; 1475 AA
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100.0%;
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Pred. No.
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                glucan useful
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Location/Qualifiers

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\mathbb{F} \mathbb{X} \mathbb{X} \mathbb{X} \mathbb{S} 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        conting composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, where the glucan is produced in the amyloplast and/or vacuole or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line of glucosyltransferase B or D enzyme, wild type or mutant and a paper GC glucosyltransferase B or D enzyme, wild-type or mutant and a paper GC glucosyltransferase B or D enzyme, wild-type or mutant and a paper GC glucosyltransferase B or D enzyme, wild-type or mutant and a paper GC comprising the glucan (paper sizing/coating agent). The vector is useful GC for producing a glucan in a plant. The method comprises transforming a GC plant cell with the vector, growing the plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the GC ribulose biphosphate carboxylase small subunit, waxy, brittle-I and GC ribulose biphosphate carboxylase small subunit, waxy, brittle-I and GC chlorophyll Ab binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. GC and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper GC biologically produced input materials, is more cost-effective and CC environmentally friendly. Moreover, glucans also exhibit thermoplastic GC The present sequence represents a GTFB mutant of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 13
AAU98034
ID AAU98
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Matches
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                        Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                      S. mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAU98034 standard;
                                                                                   Synthetic.
                                                                                                                      Streptococcus mutans
                                                                                                                                                                                                    amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        e: The present sequence is not shown in the specification created by the indexer using the GTFB sequence appearing the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 VPSYSFIRAHDSEVQDLIA
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                                                                                                                                                                                                                                                                                                                                                                  glucosyltransferase GTFB mutant D457N/D567T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                         vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Protein; 1475 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       92.6%;
                                                                                                                                                                                                             paper manufacture; mutant; mutein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
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Pred. No.
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1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1475;
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                                                                                                                                                                                                                                                                           molecule;
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CC MATLD/TSSPE. Also included are a glucan produced by the GTF mutant, CC MATLD/TSSPE. Also included are a glucan produced by the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC thermoplastic molecule or their combinations or glucan and starch where CC deficient in starch biosynthesis, transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, CC comprising a glucan produced in a plant transformed CC deficient in starch biosynthesis, transformed with a gene encoding a CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC glucan is produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the cC glucan in a plant. The method comprises transforming a cc polynucleotide for a time sufficient to produce the glucan in the CC glucan see biphosphate carboxylass small subunit, waxy, brittle-1 and CC is properties in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch cC manufacture utilising the glucan produced by GTF, which utilises beet. CC glucan produced by GTF, which utilises which cc mylorementally friendly. Moreover, glucans also exhibit thermoplastic CC moter The present sequence represents a GTFB mutant of the invention.

CC Moter The present sequence is not shown in the specification but in the information in claim 36.
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07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571KK1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypetide having changes at positions from T589D, T589E, N471D, N471D/T589B, and N471D/T589E. Also included are a glucan produced by the GTF mutant, N471D/T589E. Also included are a glucan produced by the GTF mutant,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19-DEC-2000; 2000US-0740274
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 36; Page -; 44pp; English.
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95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note= "Wild-type Asp substituted by Thr"
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Best Loc
Matches
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                           Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                 Synthetic
                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                        coating composition; amvloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                       Glucosyltransferase;
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07-JUN-1995;
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                                                                                                                                                                            WPI; 2002-414332/44
                                                                                                                              Claim 36; Page ~; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            552 VPSYSFIRAHDSEVQTLIA 570
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity 94.
18; Conservative
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95US-0478704.
95US-0482711.
95US-0485243.
95US-00077999.
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98US-0009620
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567
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                                                                                                                                                                                                                                                                                                                                    /note= "Wild-type Asp substituted by Lys"
                                                                                                                                                                                                                                                                                                                                                   note= "Wild-type Asp substituted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  92.6%;
                                                                                                                                                                                                                                                                                                                                                                                                         paper manufacture; mutant; mutein
                                                                                                                                                                                                                                                                                                                                                                                                               GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
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CC glucans are useful as substitutes for and additions to modified starch crequire input materials that produce chemical effluents, which crequire input materials that produced by GTF, which utilises biologically produced input materials, is more cost-effective and convironmentally friendly. Moreover, glucans also exhibit thempolastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention but come of the invention in claim 36.
Matches
            11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                S. mutans glucosyltransferase GTFB mutant D567T/D571K/K1014T
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAU98037 standard; Protein; 1475 AA
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                                                                                                                                                                                                                                                                                                                                                                  Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                 amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                               coating
                                                                                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   18;
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                                                                                                                                                                                                                                                                                                                                                                                                composition; ast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VPSYSFIRAHDSEVOTLIA 570
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                                                                                                                2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                  mutans
                                              98US-0210361.
95US-0478704.
95US-0482711.
               95US-0485243.
98US-0007999.
                                                                                                                                                                                                                              /note= "Wild-type Asp substituted by Lys" 1014
                                                                                                                                                                                                                                                               /note= "Wild-type Asp substituted 571
                                                                                                                                                                                                                                                                                                Location/Qualifiers 567
                                                                                                                                                                                                             /note= "Wild-type Lys substituted by Thr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      92.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                 GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                glucan; starch; lat
paper manufacture;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
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Pred. No. 5.8e
0; Mismatches
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Query Match Best Local Matches

Similarity

92.6%;

Score 88; DB Pred. No. 5.8e 0; Mismatches

5.8e-07; DB 23;

Length 1475; Indels

0

Gaps

0

Conservative

0,

Sequence

1475

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Search completed: November 13, Job time: 34.8483 secs

2003, 09:38:25

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CC (GIF) is polypepide having changes at position from 1448V, D457N, CC D567T)EXIXIAT, D457N/D567T, D457N/D57IX, D567T/D57IXK, D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2002-414332/44
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 36; Page -; 44pp; English.
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                                                and the information in claim 36.
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US-09-604-957-7
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US-09-268-347-38
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ALIGNMENTS	2 US-08-551-687-6	1 US-08-353-550-6	3 US-08-807-342B-5	2 US-08-551-687-1	1 US-08-353-550-1	4 US-09-107-532A-6456	4 US-09-134-001C-3206	4 US-09-107-532A-6786	4 US-09-252-991A-33113	4 US-09-252-991A-18759	4 US-09-252-991A-18490	2 US-08-551-687-2	1 US-08-353-550-2	2 US-08-578-709-15	4 US-09-533-494A-13	4 US-09-533-494A-17	3 US-08-977-816-1	3 US-09-231-529-1
	Sequence 6, Appli	Sequence 6, Appli	Sequence 5, Appli	Sequence I, Appli	Sequence 1, Appli	Sequence 6456, Ap	Sequence 3206, Ap	Sequence 6786, Ap	Sequence 33113, A	Sequence 18759, A	Sequence 18490, A	Sequence 2, Appli	Sequence 2, Appli	Sequence 15, Appl		~	Sequence 1, Appli	Sequence 1, Appli

US-09-007-999-2 Sequence 2, Application US/09007999 Patent No. 6087559 APPLICANT: NNICHOLS, Scott E. APPLICANT: NNICHOLS, Scott E. TITLE OF INVENTION: Substitutes for Modified Starch and TITLE OF INVENTION: Latexes in Paper Manufacture FILIR CHARTON UNMER: US/09/007,999 CURRENT FILING DATE: 1998-01-16 EARLIER APPLICATION NUMBER: 08/478,704 EARLIER APPLICATION NUMBER: 08/478,704 EARLIER FILING DATE: 1995-06-07 NUMBER OF SEQ ID NOS: 2 SOUTWARE: FastSEQ for Windows Version 3.0 SEQ ID NO 2 LENGTH: 1475 TYPE: PRT ORGANISM: Streptococcus mutans US-09-007-999-2 Query Match Best Local Similarity 100.0%; Score 95; DB 3; Length 1475; Best Local Similarity 100.0%; Pred. No. 1.5e-08; Matches 19; Conservative 0; Mismatches 0; Indels

Gaps

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RESULT 1

Qy 1 VPSYSFIRAHDSEVQDLIA 19

QY 1 VPSYSFIRAHDSEVQDLIA 19

Db 552 VPSYSFIRAHDSEVQDLIA 570

RESULT 2
US-09-210-361-2
US-09-210-361-2
IS-Sequence 2, Application US/09210361
Patent No. 6284479
PAPPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches and TITLE OF INVENTION: Latexes in Paper Manufacture FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT APPLICATION NUMBER: 09/07,999
EARLIER FILING DATE: 1998-12-11
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER APPLICATION NUMBER: 09/09,620
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1998-01-20

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TYPE: PRT
, ORGANISM: Streptococcus mutans
US-09-210-361-2
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US-09-210-361-4

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; Patent No. 6284479
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LENGTH: 1475
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Matches 19; Conserv
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            GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
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EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
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PRIOR FILING DATE: 1998-01-20
PRIOR APPLICATION NUMBER: 08/4
PRIOR FILING DATE: 08/4
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PRIOR APPLICATION NUMBER: 08/
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PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
EARLIER APPLICATION
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Pred. No. 1.5e-08;
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Pred. No.
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; TYPE: PRT ; ORGANISM: streptococcus mutans US-09-210-361-4
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR PRIOR FILING DATE: 1998-01-16
PRIOR PPLICATION NUMBER: 08/478,704
PRIOR PPLICATION NUMBER: 08/478,704
PRIOR PILING DATE: 1995-06-07
PRIOR PRILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1995-06-07
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EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
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Patent No. 6465203
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NUMBER OF SEQ ID NOS: 6
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PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/482,711
PRIOR FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version
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100.0%; Pred. No.
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                                                                                                        DB 4; Le
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                                                                                        Indels
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RESULT 6 US-09-604-957-5 ; Sequence 5, Application US/09604957 ; Patent No. 6486314

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US-09-604-957-7
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCO
FILE REFERENCE: BO 43388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 6, Application US/09604957 Patent No. 6486314
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Best Local Similarity
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                                                                                                                                              Sequence 7, Application US/09604957
Patent No. 6486314
GENERAL INFORMATION:
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CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                            Matches 11;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
                                                                      APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
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                                                                                                                                                                                                                                                                                 167 IPNYSFVRAHDYDAODPIS 185
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
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57.9%;
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73.7%;
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Pred. No.
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Pred. No. 2.3e-06
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GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: 80 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOPTWARE PATENTIN Ver. 2.1
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US-09-499-203-2
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                                   ; TYPE: PRT
; ORGANISM: Leuconostoc mesenteroides
US-09-499-203-2
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SEQ ID NO 7
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Patent No. 648631
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                                                                                                                                                                                          GENERAL INFORMATION:
APPLICANT: WCLOSH, Thomas
APPLICANT: WCLOSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karola
APPLICANT: KNUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules
FILE REFERENCE: 147-196P
                                                                                                                                                                                                                                                                                                                       Sequence 2, Application US/09499203 Patent No. 6570065
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
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                                                                                                     SOFTWARE: PatentIn Ver. 2.1 SEQ ID NO 2
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
Query Match
                                                                                                                                       CURRENT APPLICATION NUMBER: US/09/499,203
CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
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TYPE: PRT
ORGANISM: Lactobacillus reuteri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Lactobacillus reuteri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH: 1278
                                                                                        ENGTH: 2057
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es 11; Conserv
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     69.5%;
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Pred. No.
     Score 66;
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       DB 4;
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     Length 2057;
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                 RESULT 13
US-09-210-361-6
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Best Local S
Matches 13
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Matches
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APPLICANT: VAN GEEL-SCHUTTEN,
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 Sequence
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LENGTH: 1430
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                                                                                                                                                                  Query Match
Best Local (
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APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
                                                                                                                                                   Matches
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PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
                                                                                                                                                                                                                                                                                                                                APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0358D
CURRENT APPLICATION NUMBER: US/09/008,172
CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 2
SOPTWARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT ORGANISM: Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH: 545
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                                                                                   576 NYIFIRAHDSEVOTVIA 592
6, Application US/09210361
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13; Conserv
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76.5%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           pred. No. 0.0043;
4; Mismatches
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                                                                                                                                                                    Score 65; I
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                                                                                                                                                                                    DB 3; Length 1430;
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EARLIER FILING DATE: 1998-01-16

EARLIER FILING DATE: 1998-01-16

EARLIER FILING DATE: 1998-01-16

EARLIER FILING DATE: 1995-06-07

EARLIER FILING DATE: 1995-06-07

EARLIER APPLICATION NUMBER: 09/009,620

EARLIER APPLICATION NUMBER: 09/009,620

EARLIER FILING DATE: 1998-01-20

EARLIER FILING DATE: 1998-06-07

EARLIER APPLICATION NUMBER: 09/008,172

EARLIER APPLICATION NUMBER: 09/008,172

EARLIER APPLICATION NUMBER: 09/008,172

EARLIER FILING DATE: 1998-01-16

EARLIER FILING DATE: 1998-01-16

EARLIER FILING DATE: 1995-06-07

NUMBER: 05 ESO ID NOS: 6
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                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 1995-06-07
PRIOR FILING DATE: 1995-06-07
PRIOR FILING DATE: 1998-01-20
PRIOR PRIOR APPLICATION NUMBER: 09/08,172
PRIOR APPLICATION NUMBER: 08/482,711
PRIOR APPLICATION NUMBER: 08/482,711
PRIOR FILING DATE: 1998-06-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 14
US-09-740-274-6
                                                                                        ORGANISM: streptococcus mutans US-09-740-274-6
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 6, Application US/09740274 Patent No. 6465203
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Best Local :
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
Best Local Similarity Matches 13; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: FastSEQ for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Nichols, TITLE OF INVENTION:
                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH: 1430
TYPE: PRT
                                                                                                                                                                                                           SOFTWARE:
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Substitutes for Modified Starches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glucan-containing Compositions and
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                      68.4%;
76.5%;
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Score 65; DB 4;
Pred. No. 0.0042;
2; Mismatches
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Pred. No.
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CORRESPONDENCE ADDRESS:
CORRESPONDENCE ADDRESS:
ADDRESSEE: Griffith Hack & Co
STREET: Level 8, 168 Walker Street
CITY: NO. 5981838th Sydney
STATE: New South Wales
COMPUTER: New South Wales
COMPUTER: New South Wales
COMPUTER: IBM PC Compatible
COMPATION NUMBER: US/08/793,824
FILING DATE:
CLASSIFICATION NUMBER: US/08/793,824
FILING DATE: 24-AUG-1994
TELECOMMUNICATION INFORMATION:
TELEPHONE: 61 2 957 5944
TELECOMMUNICATION INFORMATION:
TELEPHONE: 61 2 957 5944
TELEFAX: 61 2 957 5944
TELEFAX: 61 2 957 5944
TELEFAX: 61 2 957 6288
TINFORMATION FOR SEG ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 1577 amino acids
TYPE: amino acid
STRANDEDNESS:
DENGTH: 1577 amino acid
STRANDEDNESS:
DENGTH: DESCRIPTION:
TOPOLOGY: not relevant
MOLECULE TYPE: protein
ORIGINAL SOURCE:
ORGANISM: Streptococcus salivarius
US-08-793-824-2
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US-08-793-824-2
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Search completed: November 13, 2003, 09:47:57 Job time : 12.3365 secs
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Patent No. 5981838
GENERAL INFORMATION:
                                                                                                                                                                                            Query Match 64.2%; Score 61; DB 2; Best Local Similarity 64.7%; Pred. No. 0.025; Matches 11; Conservative 4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Simpson, Christine Lynn
APPLICANT: Giffard, Philip Morrison
APPLICANT: Jacques, Nicholas Anthony
TITLE OF INVENTION: Genetic Manipulation of Plants to
TITLE OF INVENTION: Increase Stored Carbohydrates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES: 2
CORRESPONDENCE ADDRESS:
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661 NYIFVRAHDSEVQAVLA 677
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                                                                                                                                  3 SYSFIRAHDSEVQDLIA 19
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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 200000000
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95
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1: /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*

2: /cgn2_6/ptodata/2/pubpaa/PCT_NEW_PUB.pep:*

3: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*
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10:
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12:
13:
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Copyright (c) 1993 - 2003 Compugen Ltd
/cgn2_6/ptodata/2/pubpaa/US09E_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US09E_PUBCOMB.pep:*
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/cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

15	14	13	12	11	10	9	8	7	σ	Сп	4	w	N		No.	Result	
41	41	41	41	41	42	42	65	65	99	66	66	80	91	95	Score		
43.2	43.2	43.2	43.2	43.2	44.2	44.2	68.4	68.4	69.5	69.5	69.5	84.2	95.8	100.0	Match	Ouerv	₩
662	552	552	458	170	364	115	1430	545	1781	584	535	522	1375	1475	Match Length		
10	10	9	15	9	15	11	9	10	10	10	10	10	9	9	BB		
US-09-738-626-6490	US-09-955-732-15	US-09-775-925-2	US-10-103-313-362	US-09-775-925-31	US-10-156-761-7564	US-09-764-891-5098	US-09-740-274-6	US-09-995-749A-10	US-09-995-749A-2	US-09-995-749A-12	US-09-995-749A-13	US-09-995-749A-11	US-09-740-274-4	US-09-740-274-2	ID		
Sequence 6490, Ap	Sequence 15, Appl	Sequence 2, Appli	Sequence 362, App	Sequence 31, Appl	Sequence 7564, Ap	Sequence 5098, Ap	Sequence 6, Appli	Sequence 10, Appl	Sequence 2, Appli	Sequence 12, Appl	Sequence 13, Appl	Sequence 11, Appl	Sequence 4, Appli	Sequence 2, Appli	Description		

45	44	43	42	41	40	39	38	37	36	35 5	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
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-055-475-	-10-055-475-	US-10-055-475-2	-128-714-	315-242-12	6-761-129	-738-626	364-761-4537	-10-021-955-7	US-10-021-955-87	-10-021-955-8	-10-021-955-8	-10-353-929-4	-09-934-455-32	-09-738-626-3	-10-156-761-914	09-862-027-37	-007-280	9-815-242-129	09-815-242-	-815-242-562	-09-943-85	9-943-857-	-857-	55-73	'n	US-10-181-590-9	75-925-	09-775-925-	US-10-080-960-19
Sequence 9, Appli	e 7,	2, App	e 33	12045,	e 12914,	e 5733	45372	e 79,	Sequence 87, Appl	86,	equence 82,	49,	326	380	9148	e 37,	ce 21		122	562	е б,	e 4,	e 2,	e 14	و	(D)	œ	quence 3	Sequence 19, Appl

ALIGNMENTS

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; SOFTWARE: FastSEQ for Windows ; SEQ ID NO 2 ; LENGTH: 1475 ; TYPE: PRT ; ORGANISM: Streptococcus mutans US-09-740-274-2
                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR PPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR PRILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR PILING DATE: 1998-01-20
PRIOR FILING DATE: 1998-01-20
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Patent No. US20020031826A1
GENERAL INFORMATION:
                                                                 Query Match
Best Local Similarity
Matches 19; Conserv
                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-C
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-C
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                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 1995-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
1 VPSYSFIRAHDSEVQDLIA 19
                                                                                                                                                                                                                                                                FastSEQ for Windows Version 3.0
                                                                 100.0%; Score 95; DB 9; ilarity 100.0%; Pred. No. 1.7e-07; Conservative 0; Mismatches 0;
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                                                             0;
                                                                                                          Length 1475;
                                                                   Indels
                                                                   0;
                                                                   Gaps
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0;

552 VPSYSFIRAHDSEVQDLIA 570

US-09-740-274-4

Sequence 4, Application US/09740274 Patent No. US20020031826A1

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                                                                    ; LENGTH: 522
; TYPE: PRT
; ORGANISM: Leuconostoc mesenteroides
US-09-995-749A-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM: streptococcus mutans
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Best Local S
Matches 18
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                                                                                                                                         SEQ ID NO 11
                    Query Match
Best Local !
 Matches
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
                                                                                                                                                      PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR PRICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver: 2.1
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PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1998-01-20
                                                                                                                                                                                                                                                                                                                                                      APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: 08/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR FILING DATE: 19
                                                                                                                                                                                                                                                                  CURRENT APPLICATION NUMBER: US/09/995,749A CURRENT FILING DATE: 2001-11-29
                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES FILE REFERENCE: BO43388-CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                         APPLICANT:
 Local Similarity 73.7
les 14; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER:
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RAHAOUI, HAKIM
LEER, ROBERT-JAN
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1995-06-07
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100.0%; Fi
84.2%; Score 80; DB 10; Length 522; 73.7%; Pred. No. 2.1e-05; tive 4; Mismatches 1; Indels
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RESULT 4
US-09-995-749A-13
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FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR FILING DATE: 2000-05-25
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
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GEBL-SCHUTTEN, GE
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
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                                                                                                                                                                               SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 12
LENGTH: 584
TYPE: PRT
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Best Local &
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CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR TILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
PRIOR FILING DATE: 2000-05-25
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
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TYPE: PRT
ORGANISM: Lactobacillus reuteri
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 167 IPNÝSTVRAHDYDAODPI 184
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                                 1 VPSYSFIRAHDSEVQDLI
                                                                                       Similarity
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LEER, ROBERT-JAN
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ilarity 61.1%;
Conservative
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                                                                        Score 66; DB 10;
Pred. No. 0.0062;
4; Mismatches
                                                                                                             DB 10;
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RESULT 6 US-09-995-749A-2

Sequence 2, Application US/09995749A Patent No. US2002015556BA1

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US-09-740-274-6
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Sequence 6, Application US/09740274 Patent No. US20020031826A1 GENERAL INFORMATION:
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SEQ ID NO 10
LENGTH: 545
TYPE: PRT
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APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
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APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
FILE REFERENCE: BO43388-CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
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NUMBER OF SEQ ID NOS: 19
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PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
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CURRENT FILING DATE: 2001-11-29
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APPLICANT: LEER, ROBERT-JAN
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                                                                                                                                                                                                                                                                                                         ORGANISM: Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
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76.5%;
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Pred. No.
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Pred. No.
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                                                          OTHER INFORMATION: Xaa equals any of the naturally occurring L-amino US-09-764-891-5098
                                                                                                                                                                                                                                                                                                                              SOFTWARE: Patentin Ver. ; SEQ ID NO 5098 LENGTH: 115 TYPE: PRT ORGANISM: Homo sapiens
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PRIOR PILING DATE: 1995-06
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-01
PRIOR APPLICATION NUMBER:
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Query Match
Best Local Similarity
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR PILING DATE: 1998-12-11
PRIOR PILING DATE: 1998-11-16
PRIOR PILING DATE: 1998-01-16
PRIOR FILING DATE: 1998-01-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids, Proteins, and Antibodies
FILE REFERENCE: PC006
                                                                                                                                                                                                                                                                                                                                                                                                         Prior application data removed - consult PALM or file wrapper NUMBER OF SEQ ID NOS: 10231 SOFTWARE: PatentIn Ver. 2.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION NUMBER: US/09/764,891
CURRENT FILING DATE: 2001-01-17
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SOFTWARE: FastSEQ for Windows Version 3.0
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PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-1
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TYPE: PRT
                                                                                            OTHER INFORMATION: Xaa equals any NAME/KBY: SITE LOCATION: (112)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: streptococcus mutans
                                                                                                                                                     NAME/KEY: SITE LOCATION: (109)
                                                                                                                                                                                                                                                    LOCATION: (3)
OTHER INFORMATION: Xaa equals any of the naturally occurring L-amino acids
                                                                                                                                                                                                                                                                                          FEATURE:
NAME/KEY: SITE
                                                                                                                                                                                           OTHER INFORMATION: Xaa equals any of the naturally occurring L-amino
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68.4%;
76.5%;
  44.2%;
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Pred. No. 0.
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    Score 42; DB Pred. No. 14;
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                                                                                                                                       of the naturally occurring L-amino
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                      Length 115;
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APPLICANT: Luche, Ralf M.

APPLICANT: Wei, Bo

ITITLE OF INVENTION: DSP-12 AND DSP-13 DUAL-SPECIFICITY

ITITLE OF INVENTION: DHOSPHATASES

FILE REFERENCE: 200125.420

CURRENT APPLICATION NUMBER: US/09/775,925

CURRENT APPLICATION NUMBER: US/09/775,925

CURRENT FLILING DATE: 2001-02-01

NUMBER OF SEQ ID NOS: 33

SOFTWARE: FastSEQ for Windows Version 4.0

SEQ ID NO 31

LENGTH: 170

TYPE: PRT

ORGANISM: Homo sappiens
RESULT 12
US-10-103-313-362
; Sequence 362, App
; Publication No. U
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US-09-775-925-31
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US-10-156-761-7564
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Patent No. US20010049358A1
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Best Local S
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LENGTH: 364
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Best Local
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APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: OMURA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: HORIKAWA, HIR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION NUMBER: JP 2001-204089
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Local Similarity 44.4%;
Local Similarity 44.4%;
hes 8; Conservative
                                                                                                                                                                                              Local Similarity
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                                                                                                        72 AYHNIRVYDEETTDLLA
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HORIKAWA, HIROSHI
 Application US/10103313
                                                                                                                                                                               Conservative
                                                                                                                                                                                             43.2%;
                                                                                                            88
                                                                                                                                                                              Score 41; DB Pred. No. 32; 3; Mismatches
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Pred. No. 51;
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US-09-955-732-15
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SEQ ID NO 2
LENGTH: 552
TYPE: PRT
ORGANISM: Homo sapien
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CURRENT FILING DATE: 2002-03-12
NUMBER OF SEQ ID NOS: 653
Prior Application removed - See File Wrapper or SOFTWARE: Patentin Ver. 2.0
SEQ ID NO 362
LENGTH: 458
Sequence 15, Application US/09955732
Publication No. US20020182203A1
GENERAL INFORMATION:
APPLICANT: Luche, Ralf M.
APPLICANT: Mei, Bo
TITLE OF INVENTION: DSP-15 DUAL-SPECIFICITY PHOSPHATASE
FILE REFERENCE: 200125.433
CURRENT APPLICATION NUMBER: US/09/955,732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 2, Application US/09775925
Patent No. US20010049358A1
GENERAL INFORMATION:
APPLICANT: Luche, Ralf M.
APPLICANT: Luche, Ralf M.
APPLICANT: Mei, Bo
TITLE OF INVENTION: DSP-12 AND DSP-13 DUAL-SPECIFICITY
TITLE OF INVENTION: PHOSPHATASES
FILE REFERENCE: 200125.420
FILE REFERENCE: 200125.420
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APPLICANT: Rosen et al.
APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids, Proteins, and Antibodies
FILE REFERENCE: PJZ07C1
                                                                                                                                                                                                                                                                                                       Matches
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CURRENT APPLICATION NUMBER: US/09/775,925
CURRENT FILING DATE: 2001-02-01
NUMBER OF SEQ ID NOS: 33
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NAME/KEY: misc_feature
LOCATION: (304)
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                                                                                                                                                                                                                                                                                           43.2%;
Local Similarity 47.1%;
les 8; Conservation
                                                                                                                                                                                                                              214 AYHNIRVYDEETTDLLA 230
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Pred. No. 1.2e+02;
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APPLICANT: TATEIGHI, NACKO
APPLICANT: SENOH, AKTHIRO
APPLICANT: SENOH, AKTHIRO
APPLICANT: IKEDA, MASATO
APPLICANT: OZAKI, AKTO
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR APPLICATION NUMBER: JP 00/159162
PRIOR FILING DATE: 1999-12-16
PRIOR APPLICATION NUMBER: JP 00/280988
PRIOR FILING DATE: 2000-08-03
NUMBER OF SEO ID NOS: 7059
SOFTWARE: PATENTIN Ver. 3.0
SEQ ID NO 6490
LENGTH: 662
TYPE: PAT
ORGANISM: Corynebacterium glutamicum
US-09-738-626-6490
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US-09-955-732-15
Search completed: November 13, 2003, 10:29:00 Job time : 25.8531 secs
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US-09-738-626-6490
                                                                                                                                                                                     Query Match 43.2
Best Local Similarity 53.3
Matches 8; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: NĀKĀGĀWĀ, SATOSHI
APPLICANT: MIZOGUCHI, HIROSHI
APPLICANT: ANDO, SEIKO
APPLICANT: HAYASHI, MIKIRO
APPLICANT: OCHIAI, KEIKO
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TATEISHI, NAOKO
SENOH, AKIHIRO
                                                                                                                                                                                       43.2%; Score 41; DB 10; Length 662; 53.3%; Pred. No. 1.5e+02; tive 2; Mismatches 5; Indels
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Result
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Maximum Match 100%
Listing first 45 summaries
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130.561 Million cell updates/sec
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P14204 bacillus su
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P59107 shigella fl
P4444 naemophilus
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- FUNCTION: TO PLAY A OF THEIR A AGGREGATIC CATALYTIC FUNCTORE + SUBCELLULA - DISEASE: I	SEQUENCE OF 1-349 FROM N.A. SEQUENCE OF 1-349 FROM N.A. STRAIN=GS-5; MEDLINE=87308013; PubMed=3040685; Shirosa T., Ueda S., Kuramitsu H.K.; Shirosa T., Ueda S., Kuramitsu H.K.; "Sequence analysis of the gffB gene from Streptococcus mutans."; "Bacteriol. 169:4263-4270(1987).	SEQUENCE FROM N.A. SEQUENCE FROM N.A. SEQUENCE FROM N.A. STRAIN=UA159 / AFCC 700610 / Serotype C; MEDLINE=22295063; PubMed=12397186; Apidic D., McShan W.M., McLaughlin R.E., Savic G., Chang J., Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Qian Y., Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti J.J.; "Genome sequence of Streptococcus mutans UA159, a cariogenic dental pathogen."; pathogen."; proc. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002). [4]	SEQUENCE FROM N.A. SEQUENCE FROM N.A. STRAIN-MT4239 / Serotype C, MT4245 / Serotype E, MT4251 / Serotype F, MT4467 / Serotype E, and MT8148 / Serotype C; MEDLINE-98231643; PubMed-9570124; Fujiwara T., Terao Y., Hoshino T., Kawabata S., Ooshima T., Sobue S., Kimura S., Hamada S.; "Molecular analyses of glucosyltransferase genes among strains of Streptococcus mutans."; FEMS Microbiol. Lett. 161:331-336(1998).	bMed=2976010; Kuramitsu H.K.; f the gtfC gene from Streptococcu	CTRMU STANDARD; PRT; 1455 AA. GTPC STRMU STANDARD; PRT; 1455 AA. P13470; 069382; 069385; 069388; 069391; 069397; P05427; 01-NOV-1988 (Rel. 09, Created) 28-FEB-2003 (Rel. 41, Last sequence update) Glucosyltransferase-SI precursor (EC 2.4.1.5) (GTF-SI) (Dextransucrase) (Sucrose 6-glucosyltransferase). Streptococcus mutans. Streptococcus mutans. Bacteria: Firmicutes: Lactobacillales: Streptococcacéae;

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EMBL; M22054; AAA88592.1; -.

EMBL; D88652; BAA26102.1; -.

EMBL; D88655; BAA26106.1; -.

EMBL; D88658; BAA26104.1; -.

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EMBL; D89678; BAA26120.1; -.

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InterPro; IPR002479; CW_binding.

InterPro; IPR002479; CW_binding.

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SIMILARITY: Contains 5 cell wall binding repea
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28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
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GTFB OR SMU-1004.
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STRAIN-MT4239 / Serotype C, MT4245 / Serotype
MT4467 / Serotype E, and MT8148 / Serotype C;
MEDLINE-98231643; PubMed-9570114; Kawahata S
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"Sequence analysis of the gtfB gene
J. Bacteriol. 169:4263-4270(1987).
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D -> N (IN STRAIN MT4239).

V -> I (IN STRAINS MT4239 AND MT8148).

S -> P (IN STRAIN MT8148).
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EMBL; D88651; BAA26105.1; --
EMBL; D88654; BAA26105.1; --
EMBL; D88657; BAA26109.1; --
EMBL; D88657; BAA26113.1; --
EMBL; D89977; BAA26119.1; --
EMBL; AE014940; AAN58705.1; --
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InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CM_binding_I; 1.
Pfam; PF02324; Glyco hydro 70; 1.
Transferase; GlycosyItransferase; Si
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SIMILARITY: Contains 10 cell wall binding repeats.
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S.MUTANS
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GLUCOSYLTRANSFERASE-I.
CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
A REPEAT.
5 X TANDEM REPEATS.
                                                       MT4467)
A -> T
S -> N
H -> Y
E -> K
Y -> P
R -> H
R -> H
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N -> R
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I (IN STRAIN GS-5), MT4245, N
A (IN STRAINS GS-5, MT4245, N
57 AND MT8148).
P (IN STRAIN GS-5, MT4245, N
57 AND MT8148).
F (IN STRAIN MT4251).
N (IN STRAIN MT4251).
N (IN STRAIN GS-5, MT4467 A)
O (IN STRAINS GS-5, MT4467 A)
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N STRAIN MT4251).
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N STRAINS GS-5, MT42
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Best Local
EMBL; M17391; AAC63063.1;
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro-70.
Pfam; PF01473; CW binding_T; 16.
Pfam; PF02324; Glyco hydro-70; 1.
Transferase; Glycosyltransferase; Sign SIGNAL

1 38 POTENTIAL
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P11001;
01-JUL-1989
                                                                                                                                                                                                                                            J. Bacteriol. 169:4271-4278 (1987).

J. Bacteriol. 169:4271-4278 (1987).

II FUNCTION: PRODUCTION OF EXTRACELULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAU OF THEIR ABILLTY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

I CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

I CHICAGE + (1,6)-alpha-D-glucosyl}(N+1).

I SUBCELLULAR LOCATION: Secreted.

I J-LINKED GLUCANS AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES BOTAL TEACH OF CHURCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTAL GREEN.
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STRDO
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15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN=MFE28;
MEDLINE=87308014;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Streptococcus.
NCBI_TaxID=1317;
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                                                                                            the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed entitles requires a license agreement (See or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus downei
                                                                                                                                                                                                 -
                                                                                                                                                                                                                                                                                                                                                                                                         Ferretti J.J., Gilpin M.L., Russell R.R.B.;
"Nucleotide sequence of a glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sucrose
                                                                                                                                                                                                         FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
BINDING PROTEIN FROM S.MUTANS.
                                                                                                                                                                                               SIMILARITY: Contains 19 cell wall
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                                                                                                                                                                                                                                                                                                                                                                                                                         Russell R.R.B.;
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Pred. No.
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Y -> H (IN STRAIN MT4467).
R -> A (IN REF. 1).
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 ase; Signal; Repeat; Dental caries.
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S G (IN )
MT8148)
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9C6E09F731B4CBCF CRC64;
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                                                                                                            (See http://www.isb-sib.ch/announce/
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RESULT 4
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RI J. Bacteriol 173:989-996(1991).

RL J. Bacteriol 173:9
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Best Local S
Matches 17
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01-AUG-1992
01-AUG-1992
15-SEP-2003
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01-AUG-1992 (Rel. 23, Last sequence update)
01-SEP-2003 (Rel. 42, Last annotation update)
01ucosyltransferasel precursor (EC 2.4.1.5)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN=6715 / Serotype G;
MEDLINE=91123227; PubMed=1704006;
Abo H., Matsumura T., Kodama T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRDO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus downei (Streptococcus sobrinus).
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                                                                     This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EW the European Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entities requires a license agreement (See http://www.isb-sor send an email to license@isb-sib.ch).
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                 InterPro; IPR002479; CW_binding
                                                                                                                                                                                                                             BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 16 cell wall binding repeats.
                                                                                                                                                                                                                                                                 FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANGFERASES AND SOME TO A GLUCAN-
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                                       D90213; BAA14241.1;
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MW; B9E86A20086B798E
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CATALYTIC (APPROXIMATE)
GLUCAN-BINDING (APPROXIMATE)
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                                                                                           (See http://www.isb-sib.ch/announce/
                                                                                                                               There are no restrictions ong as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Se-06;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Fukui K., Kato
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (GTF-I) (Dextransucrase)
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                                                                                                                                                                         EMBL
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Matches 16
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RA Gilmore K.S., Russell R.R., Ferretti J.J.;

RA Gilmore K.S., Russell R.R., Ferretti J.J.;

RA Gilmore K.S., Russell R.R., Ferretti J.J.;

RI "Analysis of the Streptococcus downei gtts gene, which specifies a glucosyltransferase that synthesizes soluble glucans.";

Infect. Immun. 58:2452-248 (1990).

LI Infect. Immun. 58:2452-248 (1990).

C -!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT COPLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAL OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE COPTENT ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

C -!- CATALYTIC ACTIVITY: SUCTOSE + {(1,6)-alpha-D-glucosyl} (N+1).

C -!- ENZYME REGULATION: GLUCAN SYNTHESIS BY GTF-S IS INDEPENDENT OF PRIMER GLUCAN UNLIKE GTF-I.
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p1-pEC-1992 (Rel. 24, Created)
p1-pEC-1992 (Rel. 24, Last sequence update)
p1-pEC-2003 (Rel. 41, Last annotation update)
p2-pec-2003 (Rel. 24, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro, IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 13.
Pfam; PF02324; Glyco hydro_70; 1.
Transferase; Glycosyltransferase; Si
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                      This SWISS-PROT entry is copyright. It is produced through a c between the Swiss Institute of Bioinformatics and the EMBL the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and fo entities requires a license agreement (See http://www.isb-sib.or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcus downei
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EMBL; M30943; AAA26898.1;
                                                                                                                                                                                               -!- MISCELLANEOUS: GTF-S SYNTHESIZES WATER-SOLUBLE
                                                                                                                                       BINDING PROTEIN FROM S.MUTANS. SIMILARITY: Contains 10 cell w
                                                                                                                                                                       SIMILARITY: TO OTHER
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88.9%;
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                                                                                                                                          cell wall binding repeats.
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CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
6.5 X TANDEM REPEATS.
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BC0A66D079351ECF CRC64;
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                                          (See http://www.isb-sib.ch/announce,
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SIGNAL CHAIN

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REPEAT REPEAT

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_STRMU STANDARD; PRT; 1462

GTFD STRMU STANDARD; 069389; 069392;

P49331; 069383; 069386; 069389; 069392;

01-FEB-1996 (Rel. 33, Created)

28-FEB-2003 (Rel. 41, Last sequence upda

15-SEP-2003 (Rel. 42, Last annotation upda

15-SEP-2003 (Rel. 42, Last annotation upda
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InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 8.
Pfam; PF02324; Glyco hydro 70; 1.
Transferase; Glycosyltransferase; Si
                                                            STRAIN=UA159 / ATCC 700610 / Serotype C;

MEDLLINB=22295063; PubMed=12397186;

Ajdic D., McShan M.M., McLaughlin R.E., Savic G., Chang J.,

Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,

Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti

"Genome sequence of Streptococcus mutans UA159, a cariogenic o
                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
STRAIN=MT4239 / Serotype C, MT4245
MT4467 / Serotype E, and MT8148 / S
MTDLINE=98231643; PubMed=9570124;
                                                                                                                                                                                                                                                                                                                                                                          Honda O., Kato C., Kuramitsu H.K.;
"Nucleotide sequence of the Streptococcus
the glucosyltransferase-S enzyme.";
J. Gen. Microbiol. 136:2099-2105(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=91100958; PubMed=2148600; Honda O., Kato C., Kuramitsu H.K.;
                                                                                                                                                                                                                    "Molecular analyses of glucosyltransferase Streptococcus mutans.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rose 6-glucosyltransferase) OR SMU.910.
Acad. Sci. U.S.A. 99:14434-14439(2002).
N: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT
A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Last annotation update) precursor (EC 2.4.1.5)
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CATALYTIC (APPROXIM
CELL WALL BINDING 3
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CELL WALL BINDING 5
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CELL WALL BINDING 9
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GLUCOSYLTRANSFERASE-S.
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LL WALL BINDING 8.
LL WALL BINDING 10.
167296B5A2EBC476 C
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Serotype C;
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NI; D88653; BAA26107.1; -.

NI; D88659; BAA26111.1; -.

NI; D88659; BAA26111.1; -.

NI; D88652; BAA26112.1; -.

NI; D8979; BAA26121.1; -.

NI; AE014932; AAN88619.1; -.

NI; AE014932; AAN88619.1; -.

NI; PF02324; Glyco hydro 70.

nn; PF02324; Glyco hydro 70; 1.

nnsferase; Glycosyltransferase; Signal; Re
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CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = Efructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISBASE: DENTAL CARIES.

MISCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALE MISCELLANBOUS: GTF-I SYNTHESIZES WATER-SCLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES WATER-SCLUBLE GLUCANS (ALPHA 1,6-GLUCOSE).
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SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 6 cell wall binding 1
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E (IN STRAIN MT4467).

E (IN STRAINS MT4239 AND MT4245).

T (IN STRAINS MT4231 AND MT8148).

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              Kunst F., Ogasawara N., Moszer I., Albertini A.M., Alloni G., Azevedo V., Bertero M.G., Beesieres P., Bolotin A., Borchert S., Boursier L., Brans A., Braun M., Brignell S.C., Bron S., Brouillet S., Bruschi C.V., Caldwell B., Capuano V., Carter N.M., Choi S.K., Codani J.J., Connerton I.F., Cumnings N.J., Daniel R.A., Denizot F., Devine K.M., Dusterhoft A., Ehrlich S.D., Emmerson P.T., Entian K.D., Errington J., Fabret C., Ferrari E., Fouger D., Fritz C., Fujita M., Fujita Y., Funa S., Galizzi A., Galleron N., Ghiseppi G., Guy B.J., Haga K., Halech J., Harwood C.R., Henaut A., Hilbert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L.,
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Hilbert H., Duesterhoeft A., Pohl T.M., Weitzenegger
"Analysis of the Bacillus subtilis genome: cloning an
sequence of a 62 kb region between 275 degrees (rrnB)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Weinrauch Y., Guillen N., Dubnau D.;
"Sequence and transcription mapping of Bacillus subtilis competence
genes comB and comA, one of which is related to a family of bacterial
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Bacteria; Firmicutes;
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                                                                                                                                                                                                                                                                                                                     SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=97419515; PubMed=9274030;
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S -> N (IN STRAIN MT4239).

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Y -> C (IN STRAIN MT4251 AND MT4467).

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Robayashi Y., Koetter P., Koningstein G., Krogh S., Kumano M.,
Ra Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V.,
Ra Lee S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C.,
Ra Lee S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C.,
Ra Medina N., Mellado R.P., Mizuno M., Moestl D., Nakai S., Noback M.,
Ra Moone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,
A Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,
A Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,
A Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,
A Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S., Rey M., Reynolds S.,
Ra Presecan E., Pujic P., Purnelle B., Rapoport G., Rey M., Reynolds S.,
Ra Presecan E., Pujic P., Purnelle B., Rapoport G., Rey M., Reynolds S.,
Ra Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadaie Y.,
Ra Ra Saroti J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo I.
Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo I.
Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo I.
Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo I.
Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo I.
Sekiguchi J., Tanakashi H., Takemaru K.,
Sekowska A., Tanaka T., Tarahashi H., Takemaru K.,
Vari A., Wambutt R., Wedler E., Wedler F., Vasmarotti A.,
Vasmarot V., Vasumoto K., Yata K.,
Voshida K., Yoshikawa H.F., Zumstein E., Yoshikawa H., Danchin A.,
"The complete genome sequence of the Gram-positive bacterium Bacillu
                                                                         Matches
                                                                                           Query Match
Best Local :
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DNA_BIND
SEQUENCE
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ProDom; PD000307; HTH LUXR; 1.

ProDom; PD000039; Response_reg;

SMART; SM000421; HTH_LUXR; 1.

SMART; SM0044B; REC; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                   Subtilist; BG10381; comA.
InterPro; IPR000792; HTH_LuxR.
InterPro; IPR001789; Response_reg.
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EMBL; Z93932; CAB07904.1; -.
EMBL; Z99120; CAB15156.1; -.
PIR; A33591; RGBSCA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      use by non-profit institutions as long modified and this statement is not removed entities requires a license agreement (See
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                                                                                                                                                                                                                           PROSITE; PS00622; HTH LUXE FAMILY; 1.
PROSITE; PS50110; RESDONSE REGULATORY; 1.
Competence; Sensory transduction; Transcription regulation; Activator; DNA-binding; Phosphorylation; Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                                                Pfam; PF000196; GerE; 1.
Pfam; PF00072; response reg; 1.
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FUNCTION: Required for the development of competence in FUNCTION: Required for the expression of late-expressing competence genes, and for the expression of the growth stage-regulated molecule surfactin. May play a regulatory role during the development of competence, and an analogous role as urrC-ORF development of competence, and an analogous role as urrC-ORF
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TO THE LUXR/UHPA FAMILY OF TRANSCRIPTIONAL
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H-T-H MOTIF (BY SIMILARITY).
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n Bacillus
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RESULT 8 RNB_ECO57

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MEDLINE=21156231; PubMed=11258796;

Hayashi T., Makino K., Ohnishi M., Kurokawa K., Ishii K., Yokoyama Han C.-G., Ohtsubo E., Nakayama K., Murata T., Tanaka M., Tobe T., Iida T., Takami H., Honda T., Sasakawa C., Ogasawara N., Yasunaga Kuhara S., Shiba T., Hattori M., Shinagawa H.;

"Complete genome sequence of enterohemorrhagic Escherichia coli 0157:H7 and genomic comparison with a laboratory strain K-12.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nature 409:529-533(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Perna N.T., Plunkett G. III, Burland V., Mau B., Glasner J.D., Rose D.J., Mayhew G.F., Evans P.S., Gregor J., Kirkpatrick H.A., Posfai G., Hackett J., Klink S., Boutin A., Shao Y., Miller L., Grotbeck E.J., Davis N.W., Lim A., Dimalanta E.T., Potamousis K., Apodaca J., Anantharaman T.S., Lin J., Yen G., Schwartz D.C., Welch R.A., Blattner F.R.; "Genome sequence of enterchaemorrhagic Escherichia coli O157:H7.";
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Bacteria; Proteobacteria; Gammaproteobacteria;
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                                                                                                                                                                                 Pfam; PF00773; RNB; 1.
Pfam; PF00575; S1; 1.
SMART; SM00357; CSP; 1.
SMART; SM00316; S1; 1.
TIGRFAMS; TIGR00358; 3 prime RNase; 1.
PROSITE; PS01175; RIBONUCLEASE II; 1.
PROSITE; PS50126; S1; FALSE_NEG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an entities requires a license agreement (See http://www.isborsend an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN=0157:H7 / EDL933 / ATCC 700927;
MEDLINE=21074935; PubMed=11206551;
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                                                                                                                                                                                                                                                                                                                                                                      HAMAP; MF 01036; -; 1.
InterPro; IPR004476; 3 prime RNase.
InterPro; IPR002059; Cold_shock.
InterPro; IPR001900; Ribonuclease_II.
InterPro; IPR003029; S1.
                                                                                                                                  Hydrolase;
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                direction to yield nucleoside 5' phosphates.
SUBCELLULAR LOCATION: Cytoplasmic (By similarity)
SIMILARITY: Belongs to the ribonuclease II (RNB)
SIMILARITY: Contains 1 S1 motif domain.
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FUNCTION: Involved in mRNA degradation.
polyribonuclectides processively in the
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CATALYTIC ACTIVITY: Exonucleolytic cleavage in the
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European Bioinformatics Institute. There are no restrictions
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Similarity
8; Conserv
                                                                                                                               Exonuclease; Nuclease; RNA-binding; 561 643 S1 MOTIF.
  Conservative
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P30850; P78280;
01-JUL-1993 (Rel. 20
01-NOV-1997 (Rel. 35
28-FEB-2003 (Rel. 41
Exoribonuclease II
                                                                                                                                                                                                                                                                                                                                                                                                                      Aiba H., Baba T., Fujita K., Hayashi K., Inada T., Isono K., It Kasai H., Kashimoto K., Kimura S., Kitakawa M., Kitagawa M., Makino K., Miki T., Mizobuchi K., Mori H., Mori T., Mocomura K. Makade S., Nakamura Y., Nashimoto H., Nishio Y., Oshima T., Sai Sampei G., Seki Y., Sivasundaram S., Tagami H., Takeda J., Takemoto K., Takeuchi Y., Wada C., Yamamoto Y., Horiuchi T., Tayamoto Y., Horiuchi Y., Horiuchi T., Tayamoto Y., Horiuchi T., Tayamoto Y., Horiuchi 
                                                                                                                                                                                                                                                                                                                              Zilhao R., Camelo L., Arraiano C.M
"DNA sequencing and expression of
coli ribonuclease II.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=97426617; PubMed=9278503;
Blattner F.R., Plunkett G. III, Bloch C.A., Perna N.T., Burland V., Riley M., Collado-Vides J., Glasner J.D., Rode C.K., Mayhew G.F., Gregor J., Davis N.W., Kirkpatrick H.A., Goeden M.A., Rose D.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Zilhao R.;
Submitted (OCT-1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Enterobacteriaceae;
NCBI_TaxID=562;
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                                                                                  use by non-profit institutions as long modified and this statement is not removed. entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=K12
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "The complete genome sequence of Escherichia coli K-12.";
Science 277:1453-1474(1997).
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                                                                                                                                                                                                                                                                      SUBCELLULAR LOCATION: Cytoplasmic. SIMILARITY: Belongs to the ribonuclease SIMILARITY: Contains 1 S1 motif domain.
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                  X67913; CAA48112.1;
AE000226; AAC74368:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ν
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                       AAC74368.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26, Created)
35, Last sequence update)
41, Last annotation updat
I (EC 3.1.13.1) (Ribonucle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PubMed=9097039;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Escherichia
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL/GenBank/DDBJ databases
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(Ribonuclease
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                                                                                                              (See http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                           as
                                                                                                                                                                                                                                                                                                                                                                  Hydrolyzes single-stranded 3' to 5' direction. vage in the 3'- to 5'-
                                                                                                                                                                                                                                                                                                  II (RNB)
                                                                                                                                 Usage
                                                                                                                                                           its content
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                                                                                                                                                                                                                                                                                                  family.
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BAA14848.1;

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RESULT
RNB_SHI
SHITTER CORRESPONDED TO THE CORRESPONDED TO TH
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Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HAMAP; MF_01036; -; 1.

InterPro; IPR004476; 3 prime_RNase.
InterPro; IPR002059; Cold_shock.
InterPro; IPR002059; Cold_shock.
InterPro; IPR003029; S1.
InterPro; IPR003029; S1.
Pfam; PF005773; RNB; 1.
Pfam; PF00575; S1; 1.
SMART; SM00357; CSP; 1.
SMART; SM00316; S1; 1.
TIGRFAMS; TIGR00358; 3 prime_RNase; 1.
PROSITE; PS01175; RIBONUCLEASE II; 1.
PROSITE; PS01175; RIBONUCLEASE II; 1.
PROSITE; PS01175; S1; FALSE NEG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SHIFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence up
28-FEB-2003 (Rel. 41, Last annotation
Exoribonuclease II (EC 3.1.13.1) (Ribo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RNB
                                                                                                                                                                                                                            similarity).

CATALYTIC ACTIVITY: Exonucleolytic cleavage in the direction to yield nucleoside 5'-phosphates.

SUBCELLULAR LOCATION: Cytoplasmic (By similarity): SIMILARITY: Belongs to the ribonuclease II (RNB)

SIMILARITY: Contains 1 SI motif domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=22272406; PibMed=12384590;
Jin Q., Yuan Z., Xu J., Wang Y., Shen Y., Lu W., Wang C., Yang J., Yang G., Wu H., Cang J., Yang F., Zhang X., Zhang J., Yang G., Wu H., Cang L., Xue Y., Zhao A., Gao Y., Zhu J., Kan B., Ding R., Xue Y., Zhao A., Gao Y., Zhu J., Kan B., Wen Cheng H., Yao Z., He B., Chen R., Ma D., Qiang B., Wen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN=301 / Serot
MEDLINE=22272406;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacteria; Proteobacteria; Gam
Enterobacteriaceae; Shigella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Shigella flexneri.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EcoGene; EG11620; rnb
                                                                                        the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
                                             or send an email t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                between
                                                                                                                                                                                                                                                                                                                                                                                                               Nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                  through
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OR SF1291.
                                                                                                                                                                                                                                                                                                                                                                    bugh comparison with genomes of Escherichia leac Acids Res. 30:4432-4441 (2002). EVACTION: Involved in mRNA degradation. Hypolyribonucleotides processively in the 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SHIFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; D90766; BAA14840.1;
A64877; A64877.
                                                                                                                                                                                                                                                                                                                                                                 polyribonucleotides processively
                                                                                                                                                           SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the En
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            362 PDYRFILGEKGEVLDIVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                l Similarity
8; Conserva
                                                                                                                                                                                                                                                                                                                                                                                                                                                            sequence of Shigella flexneri 2a:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PSYSFIRAHDSEVQDLIA 19
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384
399
513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Exonuclease; Nuclease;
                                               equires a license agreement (See email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
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72490
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384
399
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sequence update)
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I -> N (IN REF. 1).

C -> G (IN REF. 1).

A -> R (IN REF. 1).
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             36B16712CDF14394 CRC64;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Ribonuclease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RNA-binding; Complete proteome
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27;
                                                                                                                                     There are no
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                                                                                                                                                                                                                                                                                                                                                                                                                                       insights into
ichia coli K12
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                                                                                                                  as its content
                                                                  http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                    Hydrolyzes single-stranded 3' to 5' direction (By
                                                                                          Usage
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              II) (RNase II).
                                                                                                                                                                                                                                                                                                                           in the
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                                                                                             γd
                                                                                                                                                                                                                                                           family
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J K., Chen
en Y., Hou
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          J., Liu
                                                                                                                                          restrictions
                                                                                                  and
                                                                                                                                                                                                                                                                                                                                                                                                                                         pathogenicity and O157.";
                                                                                                                                                                  EMBL
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                                                                                                                                                                                        a collaboration
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                                                                                                                                        outstation -
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                                                                                                    commercial
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RESULT 11
RNB HAEIN
ID RNB H
AC P4444
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Best Local S
Matches 8
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Pfam; Pr00575; S1; 1.
Pfam; Pr00773; RNB; 1.
SMART; SM00357; CSP; 1.
SMART; SM00316; S1; 1.
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P44440;
01-NOV-1995
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InterPro;
InterPro;
                                                                                                                                                                                                                                                                               MEDLINE=9530630; pubmed=7542800;
Fleischmann R.D., Adams M.D., White O., Clayton R.A., Kirkness F Fleischmann R.D., Adams M.D., White O., Clayton R.A., Merrick J Rerlavage A.R., Bult C.J., Tomb J.-F., Dougherty B.A., Merrick J McKenney K., Sutton G., Fitzhugh W., Fields C.A., Gocayne J.D., Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M., Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M., Weidman J.F., Phillips C.A., Spriggs T., Hedblom E., Cotton M.D. Wterback T.R., Hanna M.C., Nguyen D.T., Saudek D.M., Brandon R. Fine L.D., Fritchman J.L., Fuhrmann J.L., Geoghagen N.S.M., Gnehm C.L., McDonald L.A., Small K.V., Fraser C.M., Smith H.O., Venter J.C.;
                        modified
entities
or send a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-NOV-1995 (Rel. 3
28-FEB-2003 (Rel. 4
Exoribonuclease II
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TIGRRAMS; TIGRO0358; 3 prime RNase; prosite; pso1175; RIBONUCLEASE II; prosite; pss9126; S1; FALSE NEG.; psydrolase; Exonuclease; Nuclease; Nuclease; Nuclease; R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AE015155; AAN42902.1;
HAMAP; MF_01036; -; 1.
                                                                                                                                                                                                                 SEQUENCE FROM N.A.
STRAIN=Rd / KW20 / ATCC 51907;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Haemophilus influenzae.
Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RNB OR HI1733
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                                                                               the
                                                                                                         This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pasteurellaceae; Haemophilus
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                                                                                                                                                                                       -
                                                                                                                                                                                                                                                                     'Whole-genome random sequencing
                                                  s SWISS-PROT entry is copyright. It is produced through ween the Swiss Institute of Bioinformatics and the EM European Bioinformatics Institute. There are no restr by non-profit institutions as long as its content ified and this statement is not removed. Usage by and
                                                                                                                                SIMILARITY). Exonucleolytic cleavage direction to yield nucleoside 5'-phosphates. SUBCELLULAR LOCATION: Cytoplasmic (By simila SIMILARITY: Belongs to the ribonuclease II (SIMILARITY: Contains 1 S1 motif domain.
                                                                                                                                                                                                  polyribonucleotides
similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  362
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PDYRFILGEKGEVLDIVA
                                       non-profit institutions as and this statement is not re requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PSYSFIRAHDSEVODLIA 19
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IPR003029; S1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IPR004476; 3_prime_RNase.
IPR002059; Cold_shock.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Exonuclease; Nuclease;
561 643 S1 MC
644 AA; 72464 MW; 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IPR004476; 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Rel. 32, Created)
(Rel. 32, Last sequence update)
(Rel. 41, Last annotation update)
ease II (EC 3.1.13.1) (Ribonuclease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   44.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gammaproteobacteria;
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Pred.
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; 137EA724EF3735C2 CRC64;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
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No.
                                                                                                                                                                                                                                                                        assembly
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                                           (See
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 1;
27;
                                                                                                                                                    (By similarity)
clease II (RNB)
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                                    http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                   Hydrolyzes single-stranded 3, to 5, direction (By
                                                                                                                                                                                                                                                                        of Haemophilus influenzae
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U32846;

AAC23378

an email to license@isb-sib.ch).

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RESULT 12
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RA Sgouros J., Peat N., Hayles J., Baker S., Basham D., Bowman S.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Fraser A.,
RA Gonlins M., Connor R., Cronin A., Davis P., Feltwell T., Fraser A.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
James K., Jones M., Leather S., McLean J.,
RA James K., Jones M., Leather S., McDonald S., McLean J.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Moodward J., Volckaert S., Squares R., Seger K., Sharp S.,
RA Skelton J., Simmonds M., Squares R., Squares S., Stevens K.,
RA Woodward J., Volckaert G., Aert R., Squares S., Stevens K.,
RA Woodward J., Volckaert G., Aert R., Robben J., Grymonprez B.,
RA Welljens I., Vanstreels E., Rieger M., Schaefer M., Mueller-Auer S.,
RA Welljens I., Vanstreels E., Rieger M., Schaefer M., Mueller-Auer S.,
RA Gabel C., Fuchs M., Fritzc C., Holzer E., Moest D., Hilbert H.,
RA Borzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,
RA Bger P., Zimmermann W., Wedler H., Wambutt R., Purnelle B.,
RA Geffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Gallbert F., Aves S.J., Xiang Z., Hunt C., Moore K., Hurst S.M.,
RA Daga R.R., Cruzado L., Mienez J., Sanchez M., Garzon A., Thode G.,
RA Daga R.R., Cruzado L., Jimenez J., Sanchez M., Gerzon A., Frosburg S.L.,
RA Spakovski G.V., Ussery D., Barrell B.G., Nurse P.;
"The genome sequence of Schizosaccharomyces pombe.";
RI Nathre 415. 1.000
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pfam; PF00575; S1; 1.
SMART; SM00357; CSP; 1.
SMART; SM00316; S1; 1.
TIGRFAMs; TIGR00358; 3 prime RNase; 1.
PROSITE; PS01175; RIBONUCLEASE_II; 1.
PROSITE; PS05126; S1; 1.
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15-JUL-1998 (Rel. 36, Last seq
28-FEB-2003 (Rel. 41, Last ann
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InterPro; IPR004476; 3 prime RNase.
InterPro; IPR002059; Cold_shock.
InterPro; IPR001900; Ribonuclease II.
InterPro; IPR003029; S1.
                 Nature 415:871-880(2002).
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FUNCTION: COULD PLAY A PART IN MECHANISMS OF TRANSCRIPTIONAL REGULATION SIMILAR TO THAT PLAYED BY YEAST HIR1 AND HIR2 TOG
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Pred. No.
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RESULT 13
DCLZ ECOLI STANDARD; PRT; 713 AA.

ID DCLZ ECOLI STANDARD; PRT; 713 AA.

AC P52095; P78299;
DT 01-NOV-1997 (Rel. 34, Created)
DT 01-NOV-1997 (Rel. 35, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Lysine decarboxylase, constitutive (EC 4.1.1.18) (LDC)
GN LDCC OR LDCH OR LDC OR B0186.
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Best Local S
Matches 7
Yamamoto Y., Miwa Y., Miyoshi K., Furuya "The Escherichia coli ldcC gene encodes probably a constitutive enzyme."; Genes Genet. Syst. 72:167-172(1997).
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SMART; SM00320; WD40; 6.

PROSITE; PS00678; WD REPEATS 1; 1.

PROSITE; PS50082; WD REPEATS 2; 4.

PROSITE; PS50294; WD_REPEATS_REGION;
                                                                                                    Kikuchi Y., Kojima H., Tanaka T., Takatsuka Y., "Characterization of a second lysine decarboxyla Bscherichia coli.";
D. Bacteriol. 179:4486-4492(1997).
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use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by an
entities requires a license agreement (See http://www.isb-
                                                                                                                                                              SEQUENCE FROM N.A., PARTIAL SEQUENCE, STRAIN=K12 / W3110;
                                                                                                                                                                                                                      Escherichia coli
Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
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-!- SIMILARITY: BELONGS T
                                                                    SEQUENCE FROM N.A., AND STRAIN=K12 / W3110;
                                                                                                                                                    MEDLINE=97369816;
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Nuclear prot
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                                                          MEDLINE=97480927;
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THE HIR1 FAMILY OF WD-REPEAT PROTEINS
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Pred. No. 40;
4; Mismatches
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                                                                                                                              decarboxylase
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                                                                                   AND 415-456
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HSSP; P43099; 1C4K.

EcoGene; EG13219; 1dcC.

InterPro; IPR000310; Decarbxylse1.

InterPro; IPR005308; OKR_DC_1.

Pfam; PF01276; OKR_DC_1; 1.

Pfam; PF03711; OKR_DC_1 N; 1.

Pfam; PF03709; OKR_DC_1; 1.

PROSITE; PS00703; OKR_DC_1; 1.
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"The complete genome sequence
"The complete 37:1453-1474(1997).
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STRAIN=K12 / MG1655;
MEDLINE=97426617; PubMed=9278503;
MEDLINE=97426617; PubMed=9278503;
Blatther F.A., Plunkett G. III, Bloch C.A., Perna N.T., Burland V.
Riley M., Collado-Vides J., Glasner J.D., Rode C.K., Mayhew G.F.,
Gregor J., Davis N.W., Kirkpatrick H.A., Goeden M.A., Rose D.J.,
Man B. Choc V.
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-!- FUNCTION: LDC IS CONSTITUTIVELY BUT WEAKLY
-CONDITIONS. OPTIMUM ACTIVITY IS ACHIEVED B
-!- CATALYTIC ACTIVITY: L-1ysine = cadaverine
-!- COFACTOR: Pyridoxal phosphate.
-!- COFACTOR: Pyridoxal phosphate.
-!- SUBUNIT: HOMODECAMER.
-!- SUBUNIT: HOMODECAMER.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "An Escherichia coli gene (yaeO) suppresses temperature sensitive mutations in essential genes by modulating Rho-dependent transcription termination.";
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                              CONFLICT
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Davis K., Federspiel
Lashkari D., Lew H.,
                                                                                                                                                                Complete
BINDING
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Twase; Decarboxylase;
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EMBL; D83536; BAA77861.1; --
EMBL; U70214; AAB08615.1; --
EMBL; Z50870; CAA90749.1; --
EMBL; Z50870; CAA90749.1; --
EMBL; Z50870; CAA90749.1; --
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ted (SEP-1996) †
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ederspiel N., Hyman R.,
, Lew H., Lin D., Namat
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STRAIN=168 / BGSCIA1;
MEDLINE=95039891; PubMed=7952181;
Yoshida K., Sano H., Niwa Y., Ogasawara N., Fujita Y.;
Yoshida R., Sano H., Niwa S., Ogasawara N., Fujita Y.;
"Cloning and nucleotide sequencing of a 15 kb region of the Bacillus subtills genome containing the iol operon.";
Microbiology 140:2289-2298(1994).
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01-AUG-1992 (Rel. 23, Last sequence update 28-FEB-2003 (Rel. 41, Last annotation update Myo-inositol 2-dehydrogenase (EC 1.1.1.18)
IDH OR IOLG OR E83G.
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Kunst F., Ogasawara N., Moszer I., Albertini A.M., Alloni G.,
Kunst F., Ogasawara N., Moszer I., Bolotin A., Borchert
Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert
Borriss R., Boursier I., Brans A., Braun M., Brignell S.C., F
Brouillet S., Bruschi C.V., Caldwell B., Capano V., Cartter N
Brouillet S., Bruschi C.V., Caldwell B., Capano V., Cartter N
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Brusch C. Caldwell B., Capano V., Capano V.
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STRAIN=168 / 60015;
MEDLINE=92104493; PubMed=1761221;
MEDLINE=92104493; PubMed=1761221;
Fujita Y., Shindo K., Miwa Y., Yoshida K.;
Bacillus subtilis inositol dehydrogenase-encoding
"Bacillus subtilis inositol dehydrogenase-encoding";
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                                                 Winters P., Wipat A., Yamamoto H., Yamane K., Yasur
Yoshida K., Yoshikawa H.F., Zumstein E., Yoshikawa
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Pred. No. 36
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Matches 7
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EMBL; D14399; BAA03296.1; -.

EMBL; 259124; CAB16006.1; -.

PIR; JH0511; JH0511.

SubbiList; BG10669; idh.

InterPro; IPR000683; GFO_IDH_MocA_C.

InterPro; IPR0004104; GFO_IDH_MocA_C.

R Pfam; PF01408; GFO_IDH_MocA_C.

Pfam; PF02694; GFO_IDH_MocA_C; 1.

Oxidoreductase; NAD; Complete proteome.

SEQUENCE 344 AA; 38351 MW; 2FCE908D4E2C332F CRC64;
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28-FEB-2003
15-SEP-2003
                        MEDLINE-21534947; PubMed=11677608; Parkhill J., Dougan G., James K.D., Thomson N.R., Pickard D., Wain , Churcher C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia M. Baker S., Basham D., Brooks K., Chillingworth T., Connerton P., Cronin A., Davis P., Davies R.M., Dowd L., White N., Farrar J., Feltwell T., Hamlin N., Haque A., Hien T.T., Holroyd S., Jagels K., Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C., Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C., Whitehead S., Barrell B.G.; Barrell B.G.; Complete genome sequence of a multiple drug resistant Salmonella enterica servorar Typhi (T18.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RNB_SALTI
Q8Z7C9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence up
15-SEP-2003 (Rel. 42, Last annotation
Exoribonuclease II (EC 3.1.13.1) (Ribers Or STY1350 OR T1615.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Salmonella typhi.
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-!- CATALYTIC ACTIVITY: Myo-inositol + NAD(+)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dehydrogenase.";
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Nature 390:249-256(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=601;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacteria; Proteobacteria;
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PATHWAY: Myo-inositol catabolism; first step
SUBUNIT: Monomer.
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Salmonella.
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Search completed: November 13, 2003, 09:45:27
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Matches 7
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EMBL; AE016839; AA069242.1; -.
HAMAP; MF 01036; -; 1.
InterPro; IPR004476; 3 prime RNase.
InterPro; IPR002059; Cold_shock.
InterPro; IPR002059; Cold_shock.
InterPro; IPR003000; Ribomuclease_II.
InterPro; IPR003029; S1.
Pfam; PF00773; RNB; 1.
Pfam; PF00773; RNB; 1.
SMART; SM003157; CSP; 1.
SMART; SM003157; CSP; 1.
SMART; SM003157; RIBONUCLEASE II; 1.
PROSITE; PS01175; RIBONUCLEASE II; 1.
PROSITE; PS01175; RIBONUCLEASE II; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/aror send an email to license@isb-sib.ch).
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SEQUENCE FROM N.A.
SIRAIN=Ty2 / ATCC 700931;
MEDLINE=22531367; PubMed=12644504;
MEDLINE=22531367; PubMed=12644504;
Deng W., Liou S.-R., Plunkett G. III, Mayhew G.F., Rose D.J.,
Burland V., Kodoyianni V., Schwartz D.C., Blattner F.R.;
"Comparative genomics of Salmonella enterica serovar Typhi strains and CT18.";
                                                                                                                                                                                  Hydrolase; Exonuclease; Nuclease; RNA-binding; Complete proteome DOMAIN 561 643 S1 MOTIF. SEQUENCE 644 AA; 72481 MW; 17AA90ACC4C8D6EB CRC64;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -!- SIMILARITY: Contains 1 S1 motif domain.
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                                                                                                                                                                                                                                    PROSITE; PS50126; S1; FALSE_NEG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  direction to yield nucleoside 5'-phosphates. SUBCELLULAR LOCATION: Cytoplasmic (By similarity) SIMILARITY: Belongs to the ribonuclease II (RNB)
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CATALYTIC ACTIVITY: Exonucleolytic cleavage
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FUNCTION: Involved in mRNA degradation.
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                                                                                                                    Conservative
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Pred. No.
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Result
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Listing first 45 summaries
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Perfect score:
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                                                                                                                                                                                        Score
  protein search, using sw model
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1: sp_archea:*
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3: sp_fungi:*
4: sp_human:*
5: sp_invertebrate
6: sp_mammal:*
7: sp_mhc:*
9: sp_phage:*
10: sp_plant:*
11: sp_votent:*
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Match
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Gapop 10.0 , Gapext 0.5
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171.224 Million cell updates/sec
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 VPSYSFIRAHDSEVQDLIA 19
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sp_phage:*
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Copyright (c) 1993 - 2003 Compugen Ltd.
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 DB
Q59983
Q55263
Q91466
Q9EZH5
Q9EZH4
Q9EXE1
Q8KRE1
Q8KRE1
Q8KZ15
Q48756
Q91677
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         Q59983 streptococc
Q55263 streptococc
Q91466 leuconostoc
Q9ezh5 leuconostoc
Q9ezh4 leuconostoc
Q9zar4 leuconostoc
Q8kre1 leuconostoc
Q8kre1 leuconostoc
Q8kr215 streptococc
Q48756 leuconostoc
Q91cj7 leuconostoc
Q9wyj4 streptococc
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Q9jup8 Q8fht6 Q8g5w2	Q8q1m2	Q91md9 Q9m8t9 Q47843 I	Q9rnp7 Q9k510 l Q8psr0	Q9c7i1 Q9b8a8 t	Q8gs71 Q987h1	Ψw	Q9K5k6 Q9GYn4 Q9GYn4	O) W	Q00600 g Q91Ch3 s Q5417h3 q Q00599 s Q55265 ;
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ALIGNMENTS

RESULT 1 (S5983) ID Q59983 PRELIMINARY; PRT; 1590 AA. AC Q59983 DT 01-NOV-1996 (TYEMBLrel 01, Last sequence update) DT 01-NOV-1996 (TYEMBLrel 02, Last annotation update) DT 01-NOV-1996 (TYEMBLrel 22, Last annotation update) DT 01-CCT-2002 (TYEMBLREL 22, Last annotation update) DT 01-CCT-2002 (TYEMBLREL 22, Last annotation update) DT 01-NOV-1996 (TYEMBLREL 22, Last annotation update) DT 02-NOV-1996 (TYEMBLREL 22, Last annotation update) DT 02-NOV-1996 (TYEMBLREL 22, Last annotation update) DT 03-NOV-1996 (TYEMBLREL 22, Last annot	-				•											_												
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	VPSYSFIRAHDSEVQDLI 	88.4%; Score 84; DB 2; Length 1590; 88.9%; Pred. No. 1.7e-05; vative 1; Mismatches 1; Indels 0;	39 1590 1590 AA; 175955	Glycosyltransferase; Signal; Transferase. SIGNAL 1 38 POTENTIAL.	Pfam; PF02324; Glyco hydro 70; 1.	Theatro; Transato; Graco Tydro /o.	InterPro; IPR002479; CW_binding.	EMBL; D13858; BAA02976.1;	DNA Seq. 4:19-27(1993).	•	gene of serotype	Y., Isobe Y., Katayama	MEDLINE=94144605: PubMed=8312602;	STRATURED AND A STREET	SHOTENOR FROM N.A.		NORT TAXTO-1310.	Streptococciis	Bacteria: Firmicutes: Lactobacillales: Streptococcaceae;	Streptococcus sobrinus.	CHAI	CIPORT PROPERTY OF THE CIPORT (EC. 2.4.1.5).	(Transline) 22 Last	1996 (TrEMBLrel. 01,		59983 PRELIMINARY; PRT;	IIT 1	

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RESULT

Q55263

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01-OCT-2000 (TrEMBLrel. 15, C)
01-OCT-2000 (TrEMBLrel. 15, L)
01-OCT-2002 (TrEMBLrel. 22, L)
01-OCT-2002 (EC 2.4.1.5).
                                                                                                                                                                                                                                   glucosyltransferase from Leuconostoc mesenteroides NRRL B-1355.";
Submitted (OCT-1999) to the EMBL/GenBank/DDBJ databases.

EMBL; A2250172; CABP5656.1; -.

InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 14.
Pfam; PF01473; CW_binding_1; 14.
Pfam; PF02324; Glyco_hydro_70; 1.
Glycosyltransferase; Transferase.
SEQUENCE 1477 AA; 164887 MW; E6F5710DEDFCB831 CRC64;
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InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro-70.
Pfam; PF01473; CW binding_1; 15.
Pfam; PF02324; Glyco hydro-70; 1
SEQUENCE 1590 AA; 176058 MW; 9DF
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STRAIN-MRRL B-1355;
Arguello-Morales M.A., Remaud-Simeon M.,
Willemot R.M., Monsan P.;
"Sequence analysis of the gene encoding
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Streptococcus sobrinus.
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052224;
01-JUN-1998
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01-OCT-2002
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"Cloning and sequencing of a gene coding for an extracellular
"cloning and sequencing of a gene coding for an extracellular
dextransucrase (DSRB) from Leuconostoc mesenteroides NRRL B-1299
synthesizing only a a(1-6) glucan.";
FRMS Microbiol. Lett. 0:0-0(1998).
EMBL; AF030129; AB95453.;
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 14.
Pfam; PF01473; CW_binding_1; 14.
Pfam; PF01473; CW_binding_1; 14.
Pfam; PF01473; CW_binding_1; 14.
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STRAIN=NRRL B-1299;
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nteroides B-742CB, a dextransucrase
0) to the EMBL/GenBank/DDBJ database
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InterPro; IPR002318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 16.
Pfam; PF02324; Glyco hydro 70; 11.
SEQUENCE 1527 AA; 169709 MW; 1D!
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STRAIN-NRRIL B-512-F;
Bhatnagar R., Singh D.K.S.;
Bhatnagar R. Singh D.K.S.;
"Cloning and Molecular Characterization of Dextransucrase
Leuconostoc mesenteroides NRRL B-512F.";
Submitted (DEC-1996) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                  Neubauer H., Bauche A., Mollet B.;
"Isolation and characterization of the dextransucrase DsrD Leuconostoc mesenteroides Lcc4.";
Submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AY017384; AAG61158.1; -.
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW binding 1; 6.
Pfam; PF01473; CW binding 1; 6.
Pfam; PF02324; Glyco_hydro_70; 1.
Transferase, Glycosyltransferase.
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Bacteria: Firmicutes; Lactobacillales;
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Bacteria, Firmicutes, Lactobacillales, Leuconostoc
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Pred. No.
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Pred. No. 8.3e-05;
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RESULT 9
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Q48756;
01-NOV-1996
01-NOV-1996
01-OCT-2002
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01-OCT-2002 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
Glucosyltransferase.
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InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 6.
Pfam; PF02324; Glyco hydro_70; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Biochim. Biophys. Acta 1570:75-79(2002). EMBL; AB089438; BAC07265.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           glucan
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MEDLINE=21958684; PubMed=11960691;
MEDLINE=21958684; PubMed=11960691;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus.
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InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 11.
Pfam; PF02334; Glyco hydro_70; 1.5
                                                                                                                                                                      SEQUENCE FROM N.A.
STRAIN-NRRL B1299;
MEDILINE=97136686;
MEDILINE=97136686;
MONICHOIS V., Willemot R.M., Remaud-Simeon M., Croux C., Monsan P.;
"Cloning and sequencing of a gene coding for a novel dextransucrase
from Leuconostoc mesenteroides NRRL B-1299 synthesizing only alpha (6) and alpha (1-3) linkages.";
                                                                                                                                                                                                                                                                            Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lactobacillales;
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                                                                                                                                                                                                                                                                                                      Dextransucrase.
                                                                                          SEQUENCE
                                                                                                                                                  EMBL; U38181; AAB40875.1;
                                                                                                                                                           Gene 182:23-32(1996)
                                                                                                                                                                                                                                                                NCBI_TaxID=1245;
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83.3%;
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RESULT

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RESULT 12
Q9WXJ5
ID Q9WXJ
AC Q9WXJ
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Q8G9Q2;
01-MAR-2003
01-MAR-2003
01-MAR-2003
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01-OCT-2000
01-OCT-2000
01-OCT-2002
 Q9WXJ5;
01-NOV-1999
01-NOV-1999
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Mondan P., Willemot R.M.;
"Molecular characterisation of DSR-E,
synthesising dextransucrase with two of
J. Bacteriol. 184:5753-5761(2002).
EMBL; AJ430204; CAD22883.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
STRAIN=NRRL B-512F;
STRAIN=NRL B-512F;
MEDLINE=20169623; PubMed=10705445;
Funane K., Mizuno K., Takahara H., Ko
Funane encoding a dextransucrase-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mesenteroides NRRL B-512F.";
Biosci. Biotechnol. Biochem. 64:29-38(2000).
EMBL; AB020020; BAA90527.1; -.
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Pfam; PF02324; Glyco_hydro_70; 1.
SEQUENCE 1016 AA; 110344 MW; 889
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                              Q9WXJ5
                                                                                                                                                                      Transferase; Glycosyltransferase.
                                                                                                                                                                                                                            MEDLINE=22231661; PubMed=12270834; Bozonnet S., Dols-Lafargue M., Fab
                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                  NCBI_TaxID=1245;
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Bacteria, Firmicutes,
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  (TrEMBLrel.
                              PRELIMINARY;
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77.8%;
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77.8%;
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RESULT 14
Q9RE05
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AC Q9RE0
DT 01-M2

Q9RE05; Q9RE05; 01-MAY-2000

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PRELIMINARY;

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RESULT 13
Q9WXJ4
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AC Q9WXJ
AC Q9WXJ
AC Q9WXJ
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Q9WXJ4;
01-NOV-1999
01-NOV-1999
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NCBI_TaxID=1333;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus criceti.
Plasmid pAM1.
Bacteria; Firmicutes;
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                                                                                                                                                                                                                                                               SEQUENCE
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InterPro; IPR003318; Glyco_hydro_70
Pfam; PF01473; CW binding_1; 10.-
Pfam; PF02324; Glyco_hydro_70; 1.
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(TrEMBLrel. 12,
(TrEMBLrel. 22,
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78.9%;
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DE Gluco

GN GTEN.

OS Strep

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Search completed: November 13, 2003, 09:43:59
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Best Local Similarity 61.1
Conservative
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Best Local Similarity
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EMBL; AJ250173; CAB65910.2; -
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW_binding_T; 12.
Pfam; PF01473; CW_binding_T; 12.
Pfam; PF01473; Glyco hydro 70; 1.
Glycosyltransferase; Transferase.
SEQUENCE 2057 AA; 228987 MW; 62BCE9385D9A11BE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              O68542;
01-AUG-1998 (TrEMBLrel. 07, Created)
01-AUG-1998 (TrEMBLrel. 07, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Glucosyltransferase N (Fragment).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-MAR-2001 (TrEMBLrel. 16, Last sequence update) 01-OCT-2002 (TrEMBLrel. 22, Last annotation update) Alternansucrase (EC 2.4.1.140).
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Bacteria; Firmicutes; Lactobacillales; Leuconostoc.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Streptococcus salivarius.
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
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                                                                                                                                                                                                                                                                                                                                                                     Transferase.
                                                                                                                                                                                                                                                                                                                                                                                                                     "Streptococcus salivarius V1477 gtfN.";
Submitted (FEB-1998) to the EMBL/GenBank/DDBJ databases.
EMBL, AF049609; AACOS156.1; ...
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW_binding_1; 8.
Pfam; PF01473; CW_binding_1; 8.
Pfam; PF0324; Glyco_hydro_70; 1.
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                                                                                                                                                                                                                                                                                                                                             SEQUENCE
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                                                                                                                  609 NYAFVRAHDSEVQSII 624
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1449 AA;
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A; 159895 MW; 0700F6D748471BFB CRC64;
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                                                                                                                                                                                                                                 68.4%; Score 65; DB 2; Length 1449; 68.8%; Pred. No. 0.032; tive 4; Mismatches 1; Indels
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A Geneseq_10Jun03:*

1: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:*
2: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
3: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1982.DAT:*
4: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
5: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
6: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1986.DAT:*
6: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1986.DAT:*
7: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1988.DAT:*
9: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
9: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
10: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1991.DAT:*
11: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1992.DAT:*
12: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1993.DAT:*
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14: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1993.DAT:*
15: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1994.DAT:*
16: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1995.DAT:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Human polypepti	AAM39393	22	785		47	45
P falciparum isop	AAM51855	23	343	43.8	49	44
P. falciparum yfg	AAB45695	22	337		49	43
Clostridium dif.	AAW68387	19	2710		9	42
C. difficile toxin	AAR95016	17	2710		9	41
A recombinant prot	AAB30546	21	866	44.2	9	40
A recombinant prot	AAB30543	21	866		9	39
cin A immuno	AAW87971	20	862	•	9	38
£í	AAR95017	17	812	44.2	49.5	37
fi	AAR95014	17	811	•	9	36
Þ	AAW87970	20	457	•	9	ω G
Þ	AAW87969	20	320	•	9	34
Dextrane-sacchara	ABB98593	23	32	•	4	ω U
Leuconostoc mesent	AAU80055	23	1527		57	32
L. mesenteroides	AAB10667	21	2057		65	3 1
Alpha-D-glucosyltr	AAR91047	17	1577		66	30
. muta	AAU98045	23	1430	•	67	29
S. mutans glucosy	AAU98044	23	1430	•	67	28
. mutans	AAU98043	23	1430		67	27
. mutans	AAU98042	23	1430		67	26
. mutans	AAU98041	23	1430	•	67	25
	AAU98029	23	1430		67	24
treptoco	AAU79288	23	1375		78	23
S. mutans glucosyl	AAU98028	23	1375	•	78	22
Dextran saccharase	ABB98574	23	2835	•	81	21
Ω	AAR32925	14	1592	•	87	20
iogenetic s	ABP56632	24	236	•	87	19
antigenic	AAW34164	18	24	•	87	18
antigenic	AAY43338	20	22	77.7	87	17
	AAW34159	18	22	77.7	87	16
 GT subsequence. 	AAR43696	14	22	•	87	15
Streptococcus mut	AAU79284	23	1476	•	105	14
Streptococcus muta	AAU79286	23	380	93.	105	13
. mutans	AAU98040	23	1475	00	112	12
. mutans	w	23	7	0	112	11
S. mutans GTFB mut	AAU98038	23	1475	00.	112	10

ALIGNMENTS

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ARUSULT 1
AAUGHOT 1
AAUGHOT 27
AA
                                                                                                                          11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S. mutans glucosyltransferase GTFB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAU98027;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU98027 standard; Protein; 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                              19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US2002031826-A1
                                                (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000US-0740274.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                      98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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Nichols SE

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RESULT 2
AAU98030
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CC 2763A/Y170A/Y171A, and K7790 or a GTF D polypeptide having
CC changes at positions from T589D, T589E, N471D, N471D/T589D, and
CC An isolated polymucleotide which encodes P1 or P2, or its complementary
CC an isolated polymucleotide which encodes P1 or P2, or its complementary
CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant,
CC an expression cassette comprising the polymucleotide operably linked to a
CC promoter, a vector comprising the expression cassette, host cell
CC introduced with the vector, a transgenic plant comprising the
CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or
CC coating composition comprising a glucan produced in a plant transformed
CC with a gene encoding the mutant GTF, wild type or starch, a latex,
CC thermoplastic molecule or their combinations or glucan and starch where
CC deficient in starch biosynthesis, transformed with a gene encoding a
CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper
CC comprising the glucan in a plant. The method comprises transforming a
CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper
CC comprising a glucan in a plant. The method comprises transforming a
CC glucosyltransferase B or D enzyme wild-type or mutant and a paper
CC comprising a glucan in a plant. The method comprises transforming a
CC glunt cell with the vector, growing the plant cell under plant growing
CC conditions to produce a regenerated plant and inducing expression of the
CC regenerated plant, where the vector contains a transit sequence from
CC thorophyll AB hindirg profess that produce the reguence from
CC high profess biphosphate carboxylase small subunit, waxy, brittle-l and
# XXXXXXXXXXXXX
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents GTFB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (GTF) B polypeptide having changes at position from I D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB; ABK52938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; Page 21-25; 44pp; English
                                                                       Glucosyltransferase; coating composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                   S. mutans
                                                                                                                                                                                                     27-AUG-2002
                                                                                                                                                                                                                                                                                                       AAU98030 standard; Protein; 1475 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     invention an isolated protein comprising a glucosyltransferase B polypeptide having changes at position from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                  1300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 TGARTINGQLLYFRANGVQVKG 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                  TGARTINGOLLYFRANGVOVKG 1321
                                                                                                                                                glucosyltransferase GTFB mutant I448V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1475 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100.0%; Score 112; DB 23; 100.0%; Pred. No. 3.8e-10; rive 0: Mismatches 0;
                                                                       GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
                                                  paper
                                                       mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
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Synthetic
                                                                                                                                                                             16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                   07-JUN-1995
                                                                                                                                                                                       07-JUN-1995
07-JUN-1995
                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                      Streptococcus mutans
                                                                                                                                                                    (NICH/)
                                                                                                                                                                                             11-DEC-1998;
                                                                                                                                                                                                   19-DEC-2000;
                                                                                                                                                                   NICHOLS
                                                                                                                                                                                                   2000US-0740274.
                                                                                                                                                                                       98US-0210361.
95US-0478704.
95US-0482711.
                                                                                                                                                                             98US-0007999.
98US-0008172.
                                                                                                                                                                                    95US-0485243.
                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                      /note= "Wild-type Ile substituted by Val"
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Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -

44pp; English.

CC (GTF) B polypeptide having changes at position from 1448V, D457W, CC D567T, M517W, D457W,D57TK, D567T/D57TK,
CC D567T/D57TK/K1014T, 1448V/D457W/D57TK/D57TK/K7104T, 1448V/D457W/D57TK/K7104TT,
CC D567T/D57TK/K1014T, 1448V/D457W/D57TK/T79C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457W/D57TK/T79C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457W/D57B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457W/D57B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457W/D57B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457W/D57B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457B/TM57B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457B/TM57B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457B/TM57B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T, 1448V/D457B/TK/K779C/K1014T,
CC D567T/D57TK/K1014T,
CC D567T/D57TK/CD D567TM/D567T/D57TK/CD D567TM/D567T/D567TK/D567TM/D567TM/D567TM/D567TM/D567TM/D567TM/D567TM/D567TM/D567T by the indexer using the GTFB sequence appearing as AAU98027 ormation in claim 36.

SO

Sequence

1475

A

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RESULT 3
AAU98031
          В
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex,
                                                                                                                                                                                                                     (GTF) B polypeptide having changes at position from I448V, I D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, D7077D571K, D7077D571K, D7077D571K, W1014T, D567T/D571K/K719Q/K1014T, V169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having v169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, M471D/T589D, M471D/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                      Claim 36; Page -;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14-MAR-2002.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAU98031;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (NICH/)
                                                                                                                                                                                                                                                                                                                                                       invention an isolated protein comprising
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1300
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGARTINGQLLYFRANGVQVKG 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGARTINGQLLYFRANGVQVKG 1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       glucosyltransferase
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2000US-0740274
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ß
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note= "Wild-type Asp substituted by Asn"
                                                                                                                                                                                                                                                                                                                                                                                                      44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTFB mutant D457N
                                                                                                                                                                                                                                                                                                                            a glucosyltransferase
on from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1475;
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                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
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RESULT 4
AAU98032
ID AAU98032
ID AAU98032
ID AAU98032
XX AAU9
XX AAU9
XX CAAU9
DT 27-j
XX CAAU9
XX GJU
XX GJU
XX AU9
XX SY
XX SY
XX SY
XX SY
XX SY
XX SY
XX ST
PR HI M3
XX SP
PR HI M3
XX SP
PR HI M3
XX SY

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CC thermoplastic molecule or their combinations or glucan and starch where CC the glucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC for producing a glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant cell under plant growing CC conditions to produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the CC regenerated plant, where the vector contains a transit sequence from CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgenic plant, and glucan CC clucans are useful as substitutes for and additions to modified starch CC and latexes in paper manufacture. Unlike prior art techniques, which CC require input materials that produce Abenical effluents, paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                  07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coating composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27-AUG-2002
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                                                                                                                                                                                                                                                                                                                    19-DEC-2000;
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                                 NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  vacuole;
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                                                                                  98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers 567
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry)
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Pred. No. 3.8e-1
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-10;
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AAU98033
ID AAU9
XX AAU9
AC AAU9
XC AAU9
XX 27-A
XX S. m
DE S. m
XX Gluc
XW COAU
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CC and latexes in paper manufacture. Unlike prior att techniques, whic
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                              Glucosyltransferase;
                                                                                   S. mutans glucosyltransferase GTFB mutant K1014T
                                                                                                                             27-AUG-2002
                                                                                                                                                                                                        AAU98033 standard;
                                                                                                                                                                                                                                                                                                           1300
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22; Conserv
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                         GTFB; transgenic plant; paper sizing;
glucan; starch; latex; thermoplastic molecule;
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Pred. No. 3.8e-10;
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07-JUN-1995
                                                                                                                                                                                                                                                                                Synthetic.
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07-JUN-1995;
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16-JAN-1998;
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98US-0008172
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Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions

Claim 36; Page -; 44pp; English.

CRIFI B polypeptide having changes at position from IA48V, D457W, CC D567T, M517W, M517W, D457W, D567T, D57TXK/III J457W, D567T, D57TXK/III J457W, D567T, D57TXK/III J457W, D567T, D57TXK/III J48V/D457W, D567T/D57TXK, D567T/D57TXK, CC D567T/D57TXK/III J48V/D457W, D567T/D57TXK, D567T/D57TXK, CC D567T/D57TXK/III J48V/D457W/D57TXK, D567T/D57TXK, CC D567T/D57TXK/III J48V/D457W/D57TXK, D567T/D57TXK, CC D567T/D57TXK/III J48V/D457W/D57TXK, D567T/D57TXK, CC D567T/D57TXK, D567TXK/III J48V/D457W/D57TXK, D567TXK/III J48V/D457TXK, D567TXK/III J48V/D457TXK, D567TXK, D56

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07-JUN-1995;
07-JUN-1995;
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16-JAN-1998;
20-JAN-1998;
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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D57T, D567T/D571K, D567T/D571K, D567T/D571K/K1014T, 1448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polymucleotide which encodes P1 or P2, or its complementary polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polymucleotide operably linked to promoter, a vector comprising the expression cassette, host cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                key Location/Qualifiers Misc-difference 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Glucosyltransferase;
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                                                                                                                                                                        Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                             WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Synthetic.
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                                                                                                                                                   Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                      Nichols
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                                                                                                                                                                                                                                                                             NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          composition;
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98US-0008172.
98US-0009620.
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95US-0478704.
95US-0482711.
95US-0485243.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Wild-type Asp
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Pred. No. 3.8e-10;
; Mismatches 0;
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AAU98035
ID AAU98
XX AAU9
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XX 27-A
DT 27-A
DT 27-X
XX Gluc
KW Gluc
KW coat
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CC deficient in starch biosynthesis, transformed with a gene encoding a CC glucosyltransferage B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC for producing a glucan in a plant. The method comprises transforming a CC conditions to produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the CC regenerated plant, where the vector contains a transit sequence from CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. CC Glucans are useful as substitutes for and additions to modified starch CC and latexæs in paper manufacture. Unlike prior art techniques, which CC require input materials that produce chemical effluents, paper CC manufacture utilising the glucan produced by GTF, which utilises CC biologically produced input materials, is more cost-effective and CC properties and impart gloss to the paper during coating step.

CC The present sequence represents a GTFB mutant of the invention.

CC Wote: The present sequence is not shown in the specification but can be information in claim 36.
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Best Local
11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S. mutans glucosyltransferase GTFB mutant
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Misc-difference 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              introduced with the vector, a transgenic
                                                                                                                                                     19-DEC-2000;
                                                                                                                                                                                                              14-MAR-2002.
                                                                                                                                                                                                                                                                        US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               coating composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          μ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGARTINGQLLYFRANGVQVKG 1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGARTINGQLLYFRANGVQVKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                     2000US-0740274
98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ĀĀ;
                                                                                                                                                                                                                                                                                                                                                                    571
                                                                                                                                                                                                                                                                                                                                 /note= "Wild-type Asp substituted by Lys"
                                                                                                                                                                                                                                                                                                                                                                                              note= "Wild-type Asp substituted by Asn"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100.0%; Score 112; DB 23; 100.0%; Pred. No. 3.8e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   manufacture;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 plant comprising the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         D457N/D571K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a paper sizing and/or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
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RESULT 8
AAU98036
ID AAU9
XX
AC AAU9
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CR NATID/TSSEE Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary copolynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to a compression cassette comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition the mutant GTF, wild type or starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating gent). The vector is useful comprising the glucan in a plant The method comprises transforming a composition to produce a regenerated plant and inducing expression of the conditions to produce a regenerated plant and inducing expression of the conditions to produce a regenerated plant and inducing expression of the conditions are useful as substitutes for and additions to modified starch can latexes in paper manufacture. Unlike prior art techniques, which crequire input materials that produce chemical effluents, paper substitutes for and additions to modified starch can latexes in paper manufacture. Unlike prior art techniques, which crequire utilising the glucan produce down or the vacuole of sugar beet. Composition in paper manufacture. Unlike prior art techniques, which crequire and impart gloss to the paper during costing step.

CC manufacture utilising the glucan produce down the specification but as created by the indexer using the GTF mutant of the invention.

CC manufacture and impart gloss to the paper during coating as AAU98227 and the inferentials indexer using the GTFB mutant of the invention.
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                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at postion from 1448V, D457N, D567T, K1014T, D457N/D571K, D567T,D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, M71014T, 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-JAN-1998;
                                          AAU98036
                                                                                                              AAU98036 standard; Protein; 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (NICH/) NICHOLS S E
                                                                                                                                                                                                                                                                               1300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                  \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                           TGARTINGQLLYFRANGVQVKG 22
                                                                                                                                                                                                                                                                               TGARTINGQLLYFRANGVQVKG 1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%;
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                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 112; DB 23;
Pred. No. 3.8e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                           Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                          11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus mutans
                                                                                                                                                                                                 Claim 36; Page -; 44pp;
                                                                                                                                                                                                            paper manufacture, comprises mutations in specific
                                                                                                                                                                                                                   Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                       WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                    07-JUN-1995
                                                                                                                                                                                                                                                                                                                               19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                       US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                      Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-AUG-2002 (first entry)
                                                                                                                                                                                                                                                                            20-JAN-1998;
                                                                                                                                                                                                                                                                (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                    mutans glucosyltransferase GTFB mutant D567T/D571K.
                                                                                                                                                                                                                                                                                                                               2000US-0740274
                                                                                                                                                                                                                                                                                 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
                                                                                                                                                                                                                                                                            9BUS-
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                                                                                                                                                                                                                                                                                                                                                                           571
                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers 567
                                                                                                                                                                                                                                                                                                                                                                   /note= "Wild-type Asp substituted by Lys"
                                                                                                                                                                                                                                                                                                                                                                                note=
                                                                                                                                                                                                                                                                             -0009620
                                                                                                                                                                                                                                                                                                                                                                                "Wild-type Asp
                                                                                                                                                                                                 English.
                                                                                                                                                                                                                                                                                                                                                                                 substituted by Thr"
                                                                                                                                                                                                              positions
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RESULT 9
AAU98037
ID AAU9
XX AAU9
AC AAU9
AC AAU9
AC S. m
XX Gluc
KW Gluc
KW Coatt
KW coatt
KW coatt
KW amyl
XX Key
FT Misc
FT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          멍
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                               Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

The present sequence represents a GTFB mutant of the invention.

Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 was created by the indexer using the GTFB sequence appearing as AAU98027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S. mutans glucosyltransferase GTFB mutant D567T/D571K/K1014T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-AUG-2002
                                                 Claim 36; Page -; 44pp; English
                                                                                                                                                                                                             WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19-DEC-2000; 2000US-0740274.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    coating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAU98037 standard; Protein; 1475 AA
                                                                                                                                                                                                                                                                                                                       (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                    16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US2002031826-AJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             require input materials that produce chemical effluents, paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        information in claim 36.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGARTINGQLLYFRANGVQVKG 1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1475 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                 95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note= "Wild-type Lys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note= "Wild-type Asp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "Wild-type Asp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 112; DB 23; Pred. No. 3.8e-10; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            substituted by Thr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                substituted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 substituted by
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
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The invention an isolated protein comprising a glucosyltransferase

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Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGTF) B polypeptide having changes at position from I448V, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, D567T/D571K/K1014T, T448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, V1671K/K779C, T589D, 
   Misc-difference
                                                                    Misc-difference
                                                                                                                                                                                                                                                       Synthetic.
                                                                                                                                                                                                                                                                                             Streptococcus
                                                                                                                                                                                                                                                                                                                                                             amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S. mutans GTFB mutant I448V/D457N/D567T/D571K/K779Q/K1014T
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAU98038 standard; Protein;
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                                                                    /note= "Wild-type Ile substituted
457
/note= "Wild-type Asp substituted 567
                                                                                                                                        Location/Qualifiers
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CC (GTF) B polypeptide having changes at position from I448V, D457N, D567T, D571K, X1014T, D457N/D567T D457N/D57TK, D67T/D571K, D67T/D571K, D67T/D571K, D67T/D571K, D67T/D571K, CC D567T/D571K/K1014T, I448V/J457N/D567T/D571K, D67T/D571K, D67T/D571K, CC D567T/D571K/K1014T, I448V/J457N/D567T/D571K/K779Q/K1014T, CC P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CC changes at positions from T589D, T589E, N471D, M471D/T589D, and CC N471D/T589E. Also included are a glucan produced by the GTF mutant, CC polynucleotide, a ribonucletic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucletic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucletic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the pression cassette, host cell introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sixing and/or CC coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, ct the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucan produced with a gene encoding a glucan in a plant. The method comprises transforming a glucan produced plant and inducing expression of the complications to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce a transforming a complications to produce a transforming a produced plant where the vector contains a transit sequence from the produced in the amyloplast of poatuoe a transgenic plant, and glucan in the amyloplast of poatuoe a transgenic plant, and glucan in the produced in the amyloplast of poatuoe a transgenic plant, and glucan in the produced in the amyloplast of poatuoe at techniques, which creating the placen produced by GTF, which utilises biologically friendly. Moreover, glucans also exhibit thermoplastic complete and contains a sequence from th
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16-JAN-1998;
16-JAN-1998;
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environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTPB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTPB sequence appearing as AAU980: and the information in claim 36.
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95US-0482711.
95US-0485243.
95US-0007999.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, B457N/D571K, D567T, D457N/D57TK, D567T/D571K, D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11-DEC-1998;
07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAU98039
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         07-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US2002031826-A1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1300
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TGARTINGQLLYFRANGVQVKG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGARTINGQLLYFRANGVQVKG 1321
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            95US-0478704.
95US-0482711.
95US-0485243.
95US-007999.
98US-0008172.
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169..171
/note= "Wild-type Tyr-Tyr-Tyr substituted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ala-Ala-Ala"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   44pp;
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100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       English.
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Pred. No. 3.8e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTFB mutant YYY169-171AAA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CC deficient in starch biosynthesis, transformed with a gene encoding a glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC for producing a glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant cell under plant growing CC conditions to produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the CC regenerated plant, where the vector contains a transit sequence from CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgenic plant, and glucan CC chlorophyll AB binding protein to produce a transgenic plant, and glucan CC glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which CC require input materials that produce chemical effluents, paper CC manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and CC environmentally friendly. Moreover, glucans also exhibit thermoplastic CC properties and impart gloss to the paper during coating step.

CC The present sequence is not shown in the specification but can define information in claim 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
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Best Local
                                                                      11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line and given is produced in the amyloplast and/or vacuole or a maize line and given is produced.
                                    16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                  19-DEC-2000;
                                                                                                                                                                                                      14-MAR-2002
                                                                                                                                                                                                                                         US2002031826-A1
                                                                                                                                                                                                                                                                                                Misc-difference
                                                                                                                                                                                                                                                                                                                                                    Synthetic
                                                                                                                                                                                                                                                                                                                                                                     Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                     coating composition;
amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;

    mutans glucosyltransferase

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       information in claim 36.
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                                                                                                                                                                  2000US-0740274.
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                                  98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
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                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                           /note= "Wild-type Lys substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.0%; Score 112; DB 23; 100.0%; Pred. NO. 3.8e-10; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                       paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTFB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mutant K779Q.
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무 S

1300

1 TGARTINGOLLYFRANGVOVKG 22

TGARTINGQLLYFRANGVQVKG 132

Matches Query Match

Local

l Similarity 22; Conser

100.0%; ilarity 100.0%; Conservative

0;

Score 112; DB 2 Pred. No. 3.8e-1 Mismatches

23; 5

Length

1475; 0,

Gaps

0

X S X S X S X B X

13-AUG-2002 (first entry)

AAU79286 standard; Protein; 380

Streptococcus mutans monoclonal antibody-related protein #3

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CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T), K1014T, D457N/D557TK, M577N, D557TK/K1014T, D457N/D57TK, D567T/D57TKK, D567T/D567TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D56TKK, D56TK/D57TKK, D567T/D57TKK, D567TK/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567T/D57TKK, D567TK/D57TKK, D567TK/D57TKK, D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D567TK/D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2002-414332/44
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (NICH/) NICHOLS S
  1475 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        comprising
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from I448V, D457N.
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                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 21
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JP2002114709-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          anti-caries; glucosyl transferase-B; immunotherapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Antibody; dental caries; water insoluble glucan synthetase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    04-OCT-2000; 2000JP-0304889
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
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                                                                                                                                                                                                                                                                    13-AUG-2002
                                                                                                                                                                                                                                                                                                                AAU79284 standard; Protein; 1476
                                     WPI; 2002-448101/48.
                                                                                                                                                                                   Streptococcus
                                                                                                                                                                                                                                           Streptococcus mutans monoclonal antibody-related protein
                Anti-caries
                                                                                     04-OCT-2000;
                                                                                                           04-OCT-2000;
                                                                                                                                    16-APR-2002
                                                                                                                                                            JP2002114709-A
                                                                                                                                                                                                         anti-caries;
                                                                                                                                                                                                                      Antibody;
                                                              (-INYU)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5; Page 19-20; 28pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                         l Similarity
21; Conserv
                                                              UNIV NIPPON
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                                                                                                                                                                                                                                                                                                                                                                                             TGARTINGQLLYFRANGVQVKG
                                                                                                                                                                                                                      dental caries; water insoluble glucan synthetase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         380
                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
               agent composed of a monoclonal antibody against
                                                                                                                                                                                                         glucosyl
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                                                                                                           2000JP-0304889
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                                                                                                                                                                                                           transferase-B;
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Pred. No. 1
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RESULT 15
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Best Local Similarity
Matches 21; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              inhibitory enzyme against water insoluble glucan transferase-B (GTF-B) of Streptococcus mutans -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 3; Page 13-16; 28pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GT; glucosyltransferase; immunoresponse; peptidyl tetanus; measles; polio.
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                                      The sequences (AAR43694-98) are subsequences from GT, they provoke T- and B-cell responses in mammals. The can be used to produce a vaccine comprising 2 of these sequences attached to a peptidyl core matrix. They are useful in producing T-cell responses to the GT enzyme causing a reduction of colonisation or accumulation of mutans steptococcal strains in mammals. The vaccines can be used in preventing dental caries.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GT subsequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25-MAR-2003
20-MAY-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAR43696 standard; peptide; 22
                                                                                                                                                                                       Synthetic reactions
                                                                                                                                                                                                                                                                                                                      01-MAY-1992;
                                                                                                                                                                                                                                                                                                                                                    30-APR-1993;
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                                                                                                                                                                                                                                                                                                                                                                                                                                         Synthetic.
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                                                                                                                                                                                                                                                               Smith
                                                                                                                                                            Claim 3; Page 23; 38pp; English.
                                                                                                                                                                                                                                                                                           (FORS-) FORSYTH DENTAL INFIRMARY FOR CHILDREN
                          in preventing dental car
(Updated on 25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1301
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  represents a Streptococcus mutans monoclonal antibody-related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TGARTINGQLLYFRANGVOVKG 22
                                                                                                                                                                                      glucosyl-transferase peptide(s) - provoke Tin mammals, and are effective against dental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1476 AA;
                                                                                                                                                                                                                                                              Taubman MA;
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                             correct PN field.)
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and is derived by analysis of the total score distribution.
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toxin A - Clostrid
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RESULT 2 A38175 A38175 G;Species: Streptococcus sobrinus C;Species: Streptococcus sobrinus C;Date: 28-Aug-1992 #sequence_revision 28-Aug-1992 #text_ch: C;Accession: A38175 R;Abo, H.; Mtsumura, T.; Kodama, T.; Ohta, H.; Fukui, K.; Ki J. Bacteriol. 173, 989-996, 1991 A;Title: Peptide sequences for sucrose splitting and glucan A;Reference number: A38175; MUID:91123227; PMID:1704006 A;Accession: A38175 A;Accession: A38175 A;Status: preliminary A;Molecule type: DNA	Query Match 100.0%; Score 112; DB 2; Best Local Similarity 100.0%; Pred. No. 6.1e-10; Matches 22; Conservative 0; Mismatches 0; Matches 17GARTINGQLLYFRANGVQVKG 22	641,'N',643-1475 <sh2> strain GS-5 eat homology l repeat homology <cp1> l repeat homology <cp2> l repeat homology <cp3> l repeat homology <cp3> l repeat homology <cp4> l repeat homology <cp5></cp5></cp4></cp3></cp3></cp2></cp1></sh2>	pe: DNA pe: DN	RESULT 1 B33135 Grib protein precursor - Streptococcus mutans C;Species: Streptococcus mutans C;Date: 23-Oct-1990 #sequence revision 23-Oct-1990 #text C;Accession: B33135; A33128 R;Shiroza, T; Ueda, S; Kuramitsu, H.K. J. Bacteriol. 169, 4263-4270, 1987 A;Title: Sequence analysis of the gtfB gene from Strepto A;Reference number: A33135; MUID:87308013; PMID:3040685 A,Accession: B33135	ALIGNMENTS	30 46 41.1 744 2 F95013 31 46 41.1 1301 2 S18118 32 46 41.1 2364 2 I40884 33 45 40.2 142 2 F87265 34 45 40.2 630 2 F87263 35 45 40.2 648 2 S10869 36 44 39.3 158 2 AIZ117 37 44 39.3 522 2 D71074 38 44 39.3 522 2 H75135 40 44 39.3 566 2 S7463 41 44 39.3 566 2 C84220 42 44 39.3 601 2 AG0066 43 44 39.3 829 2 T29372 44 39.3 829 2 T29372 44 39.3 829 2 S36851
; xt_change 15-Oct-1999 K.; Kato, K.; Kagawa, H. lucan binding within Streptococcus	Indels 0; Gaps 0;		8588.1; PID:g153640 1990 ranslation	ct_change 15-Oct-1999 occoccus mutans.		pneumococcal surfa alpha-amylase - Al cytotoxin L - Clos conserved hypothet hypothetical prote enterocoxin A - Cl hypothetical prote probable dipeptide probable methylmal methylmalonyl-coa high affinity sulf propopionyl-CoA carb probable AMP-bindi hypothetical prote TonB-dependent rec L-shaped tail fibe

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F;1093-1112/Domain: cpl x
F;1292-1241/Domain: cpl x
F;1229-1306/Domain: cpl x
F;1287-1306/Domain: cpl x
F;1330-1351/Domain: cpl x
F;1352-1371/Domain: cpl x
F;1402-1420/Domain: cpl x
F;1465-14464/Domain: cpl x
F;14513-1532/Domain: cpl x
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A;Cross-references: GB:D90213;
C;Superfamily: cpl repeat homol
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A;Molecule type: DNA
A;Residues: 1-51 <GIF>
A;Cross references: EMBL:Z11873
C;Genetics:
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R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least two glucosyltransferase A;Reference number: A44811; MUID:92148377; PMID:1838391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             glucosyltransferase (EC 2.4.1.-) S - Streptococcus salivarius C;Species: Streptococcus salivarius c;Species: Streptococcus salivarius c;Species: 6-Sep-1992 #sequence revision 16-Sep-1992 #text_change C;Accession: S22737; S28810; E44811; S22727
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                                                                                R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least two A;Reference number: A44811; MUID:92148377; PMID:1838391
A;Accession: A44811
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A;RULUULU -;FISI8 <GIF>
A;Residues: 1-1518 <GIF>
A;Cross-references: EMBL:Z11873; NID:g47526; PIDN:CAA77900.1; PID:g47527
A;Cross-references: EMBL:Z11873; NID:g47526; PIDN:GAA77900.1; PID:g47527
                                                                                                                                                                                   glucosyltransferase (BC 2.4.1.-) I - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 31-Dec-1993 #sequence_revision 31-Dec-1993 #text_change C;Accession: A44811; S22726; S28809
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A;Accession: S22737
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Keywords: glycosyltransferase; hv;1456-1475/Domain: cpl repeat hom
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Best Local (
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Cross-references: EMBL:Zl1872; NID:g47530; PIDN:CAA77898.1; PID:g47531
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t homology <CP4>
t homology <CP5>
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Pred. No.
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Pred. No. 8.9e-06;
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C;Genetics:
A;Gene: gttU
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; h
F;1307-1326/Domain: cpl repeat homo
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J. Bacteriol. 169, 4263-4270, 1987

A;Title: Sequence analysis of the gtfB gene from Streptococcus mutans
A;Reference number: A33135; MUID:87308013; PMID:3040685
A;Accession: C33135
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A; Residues: 1-1375 < UED >
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A;Title: Sequence analysis of the gtfC gene from Streptococcus mutans GS-5.
A;Reference number: JT0345; MUID:89137980; PMID:2976010
A;Accession: JT0345
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C;Date: 31-Mar-1992 #sequence_revision 31-Mar-1992
C;Accession: JT0345; C33135
R;Ueda, S; Shiroza, T; Kuramitsu, H.K.
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                             Gene 182, 23-32, 1996
A;Title: Cloning and sequencing of a gene coding A;Title: Cloning and sequencing of a gene coding A;Reference number: JC5473; MUID:97136686; PMID:6
A;Accession: JC5473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Description: catalyzes the synthesis of both water-soluble and water-insoluble glucans C;Superfamily: cpl repeat homology C;Superfamily: dpl repeat homology C;Keywords: duplication; glycosyltransferase; hexosyltransferase F;1-34/Domain: signal sequence #status predicted <SIG>
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A; Residues: 1-349 <SHI>
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                                                                                               R;Monchois, V.; Willemot, R.M.; Remaud-Simeon, M.; Croux, C.; Monsan, Gene 182, 23-32, 1996
                                                                                                                                                          C;Species: Leuconostoc mesenteroides
C;Date: 07-Jul_1997 #sequence_revision 29-Aug-1997 #text_change 29-Aug-1997
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                     A;Status: nucleic
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type: DNA
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Pred. No. 0.
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Pred. No.
                       shown; translation not
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A,Gene: dsrA
A,Gene: dsrA
C,Keywords: glycosyltransferase; hexosyltransferase
E,78-870/Domain: catalytic #status predicted <CAT>
F,922-1290/Domain: glucan-binding #status predicted <GCB>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       glucosyltransferase (EC 2.4.1.-) gtfS precursor - Streptococcus sobrinus C;Species: Streptococcus sobrinus C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change 15-Oct-1: C;Accession: A41483
R;Gilmore, K.S.; Russell, R.R.B.; Ferretti, J.J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Gene: gtfS
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R;Gilmore, K.S.; Russell, R.R.B.; Ferretti, J.J.
Infect. Immun. 58, 2452-2458, 1990
A;Title: Analysis of the Streptococcus downei gtfs gene,
A;Reference number: A41483; MUID:90316665; PMID:2142479
                                                                                                                                                                                                                                                                                                                                                                                            glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct.199 #sequence_revision 22-Oct.-C;Accession: T30857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-1365 <GIL>
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C;Comment: This enzyme cataly
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                                                                                                                                                                                                                                                     A;Status: preliminary; translated A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030
                                                                                                                                                                                                                                                                                                                                                                      C;Accession: T30
R;Simpson, C.L.;
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                                                                                                                                                                                                                     A;Cross-references: EMBL:L35495; NID:g662378; PID:g662379; PIDN:AAC41412
                                                                                                                                                                                                                                         A;Residues: 1-1449 <SIM>
                                                                                                                                                                                                                                                                                             A; Accession: T30857
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Best Local
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Best Local
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15; Conserv
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7:
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                                                                TGARTINGQLLYFRANGVOVKG 22
                                TGHQNINGQELFFDNNGVQVKG
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                                                                                                                                                                                                                                                                                                                                                                          Giffard, P.M.; Jacques, N.A.
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Pred. No. 0.00072;
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                                                                                                                        Score 73; DB 2;
Pred. No. 0.0016;
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                                1279
                                                                                                        Mismatches
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                                                                                                                                                                 RESULT 11
T30552
                                                                                                        glucosyltransferase N - Streptococcus salivarius (fragment) C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_ch
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                                                                      C;Accession:
R;Jaffe, R.I.
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                                  submitted to the EMBL Data Library, February 1998 A;Description: Streptococcus salivarius V1477 gtfN
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A; Reference number: A; Accession: T30552
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T30552

Z20854

#sequence_revision

#text_change

22-Oct-1999

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F;169-189/Domain: cpl repeat homology <CP1>F;264-283/Domain: cpl repeat homology <CP2>F;349-368/Domain: cpl repeat homology <CP3>F;504-523/Domain: cpl repeat homology <CP4>F;525-548/Domain: cpl repeat homology <CP5>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Residues: 1-563 <BAN>
A;Cross-references: GB:M30945; NID:g153637; PIDN:AAA26894.1;
C;Superfamily: cpl repeat homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R;Banas, J.A.; Russell, R.R.B.; Ferretti, J.J.
Infect. Immun. 58, 667-673, 1990
A;Title: Sequence analysis of the gene for the glucan-binding A;Reference number: A37184; MUID:90170123; PMID:2307516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          glucan-binding protein - Streptococcus mutans
c;Species: Streptococcus mutans
c;Species: Streptococcus mutans
C;Date: 31-Jan-1992 #sequence_revision 31-Jan-1992 #text_change 15-Oct-1999
C;Accession: A37184
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A; Cross-references: EMBL: AF030129;
A; Cross-references: 
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A;Title: Cloning and sequencing of a gene coding for an A;Reference number: Z20981; MUID:98164374; PMID:9503626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         probable dextransucrase (EC 2.4.1.5), extracellular - Leuconostoc mesenteroides C;Species: Leuconostoc mesenteroides C;Becies: Leuconostoc mesenteroides C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 11-May-2000 C;Accession: T31098
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C;Function:
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GWRTIGGKKYYFDTNGVQVKG
                                                                                 GARTINGQLLYFRANGVQVKG 22
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Pred. No. 0.00
1; Mismatches
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B-1299
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0.0039;
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F;1127-1146/Domain: cpl repeat he F;1127-121/Domain: cpl repeat he F;1257-1276/Domain: cpl repeat he F;1277-1297/Domain: cpl repeat he F;1277-1297/Domain: cpl repeat he F;1321-1340/Domain: cpl repeat he F;1341-1361/Domain: cpl repeat he F;1345-1361/Domain: cpl repeat he F;1345-1404/Domain: cpl repeat he F;1345-
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A;Molecule type: DNA
A;Residues: 1-1449 <UNF>
A;Cross-references: EMBL:AF049609; NID:g2935545; PID:g2935546; PIDN:AAC05156.1
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C;Date: 30-Sep-1993 #sequence_revision 30-Sep-1993 #text_change 07-May-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dextransucrase (EC 2.4.1.5) precursor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999 C;Accession: T30858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: DNA
A; Residues: 1-1431 < HON>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C; Accession:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Cross-references: GB:M29296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Status: preliminary
                                                                                                                         A;Gene: gtfm
                                                                                                                                                                                A;Residues: 1-1577 <SIM>
A:Cross-references: EMBL:L35928;
                                                                                                                                                                                                                                                                                                                                       A,Title: Streptococcus salivarius ATCC 25975 possesses at least two genes coding for pri
A,Reference number: Z20909; MUID:95122197; PMID:7822030
                                                                                                                                                                                                                                                                                                                                                                                                                                  R;Simpson,
                                                                                                                                                                                                                                              A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                            A;Accession: T30858
                                                                                                                                                                                                                                                                                                                                                                                                     R;Simpson, C.L.; Giffard, P.M.; Jacques, N.A.
Infect. Immun. 63, 609-621, 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Genetics:
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14; Conservative
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12; Conserv
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59.1%;
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t homology <CP3>
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Pred. No. 0.01
5; Mismatches
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Pred. No. 0.011;
2; Mismatches
                                                                                                                                                                                   NID:g662380; PID:g662381; PIDN:AAC41413.1
Score 66; DB
Pred. No. 0.02
4; Mismatches
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Search completed: November 13, Job time : 15.6588 secs

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R;Sun, J.W.; Wanda, S.Y.; Camilli, A.; Curt J. Bacteriol. 176, 7213-7222, 1994
A;Title: Cloning and DNA sequencing of the A;Reference number: A55221; MUID:95050304; A;Accession: A55221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                detranase inhibitor precursor - Streptococcus sobrinus (strain UAB66, éerotype
C;Species: Streptococcus sobrinus
C;Date: 23-Mar_1995 #sequence_revision 23-Mar-1995 #text_change 17-Mar-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT
A55221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: GB:L34406
C;Superfamily: opl repeat homology
F;173-192/Domain: cpl repeat homology <CPl>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-329 <SUN>
                                                                                                                                                                                                                                    J. Bacteriol. 183, 4823-4838, 2001
A,Title: Genome Sequence and Comparative Analysis of the
A,Reference number: A96900; MUID:21359325; PMID:21359325
                                                                                                                                                                                                                                                                                 R;Nolling, J.; Breton, G.; Omelchenko, M.V.; Markarova, ; Daly, M.J.; Bennett, G.N.; Koonin, E.V.; Smith, D.R.
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TGLQTIDGNTYYFDSNGIMQTG 1490
                             TGARTINGQLLYFRANGVQVKG 22
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Pred. No.
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Pred. No. 0.0056;
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 200000000
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      Score
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re greater than or equal to the score of the result being printed,
is derived by analysis of the total score distribution.
      105
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Gapop 10.0 , Gapext 0.5
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      SwissProt_41:*
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Copyright (c) 1993 - 2003 Compugen Ltd
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DOC_BPP1
SP1_MOUSE
SP1_HUMAN
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Y119_NPVOP
TOXA_CLODI
SP1_RAT
DLHH_AQUAE
USF_AQUPY
TZMI_METUA
LECT_MOUSE
MCCM_BATT
VLTF_BPTS
YC27_ARCFU
YQO2_CAEEL
ISP6_SCHPO
OE1R_MOUSE
CB1R_FELCA
CB1R_HUWAN
CB1R_MOUSE
CB1R_RT
DX13_CHLRE
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DP41_BACHD
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P17970 streptcoccc
P11001 streptcoccc
P13470 streptcoccc
P29336 streptcoccc
P29336 streptcoccc
P49331 streptcoccc
P19536 orgyia pseu
P16154 clostridium
O97jc5 clostridium
O97jc5 clostridium
O96259 bacteriopha
O8090 mus musculu
P08047 homo sapien
O01714 rattus norv
O67802 aquifex per
P24721 mus musculu
D88723 methanocccc
P24721 mus musculu
                                              Q91dd8
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Q095241
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I archaeoglob
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40	40	40	40	40	40	40	40.5	40.5	41	41	41
35.7	35.7	35.7	35.7	35.7	35.7	35.7	36.2	36.2	36.6	36.6	36.6
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WZC_SALTY	WZC_SALTI	TOP1_BACSU	RFA1_CRIFA	ALN_YEAST	NUCC_SYNY3	3MGH_CLOPE	VL2_HPV2A	VL2_HPV27	OSTA PSEAE	Y073_TREPA	CB1R_TARGR
Q9f7b1 salmonella		P39814 bacillus su	Q23696 crithidia f	P32375 saccharomyc	£27724 synechocyst	Q8xha9 clostridium	P25487 human papil	P36755 human papil	Q9i5u2 pseudomonas		Q9pui7 taricha gra

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Transferase; Glycosyltransferase; Signal; Repeat; Dental caries;
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OC Streptococci
OC Streptococci
OX NCBI_TaxID=
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CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus sobrinus glucosyltransferase (water-insoluble glucan synthetase).";

J. Bacteriol. 173.989-996(1991).

II. Bacteriol. 173.989-996(1991).

II. FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAL OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

II. CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N) = D-SUBCELLULAR LOCATION: Secreted.

II. DISEASE: DENTAL CARIES.

III. DISEASE: DENTAL CARIES.

III. DISEASE: DENTAL CARIES.

III. DISEASE: OLIVIAL SANTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA INSCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA INSCELLANBOUS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-AUG-1992 (Rel. 23, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CONFLICT
                                                                                                                                                                                                                                                                            the European Bioinformatics Institute. The use by non-profit institutions as long a modified and this statement is not removed. entitles requires a license agreement (See lor send an email to license@isb-sib.ch).
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Bacteria; Firmicutes; Lactobacillales; Strepto
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Pfam; PF02324; Glyco hydro 70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental SIGNAL 1 38 POTENTIAL.
CHAIN 39 1592 GLUCOSYLTRANSFERASE-I.
DOMAIN 39 1044 CATALYTIC (APPROXIMATE).
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SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.

SIMILARITY: Contains 16 cell wall binding repeats.
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ATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZE
                                                                                                                 Pro; IPR002479; CW binding-
pro; IPR003318; Glyco-hydro_70
PF001473; CW binding 1; 13.
PF02324; Glyco-hydro_70; 1.
                                                                                                                                                                                                                                   D90213; BAA14241.1;
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T., Kodama T., Ohta H., Fukui K.,
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Pred. No. 7.7e-09;
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Y --> H (IN STRAIN MT4467).
R --> A (IN REF. 1).
ADQDVRVAASTAPSTDGK --> LIKMFALRLARPHQQMA
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Best Local S
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J. Bacteriol. 169:4271-4278 (1987).

I. PUNCTION: PRODUCTION OF EXTRACELULAR GLUCANS, THAT ARE THOUGHT FUNCTION: PRODUCTION OF EXTRACELULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE BEVELOPMENT OF THE DESTIAL PLAQUE BECAL OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

I. CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N) = D-incomposition of the sucrement of the surface of the surface
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P11001;
01-JUL-1989
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                          InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding_1; 16.
Pfam; PF02324; Glyco hydro 70; 1.
Transferase; GlycosyItransferase; Si
                                                                                                                                                                                                                                                                                                                                                                                                    This
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"Nucleotide sequence of a glucosyltransferase
sobrinus MFe28.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
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                                                                                                                                                                      EMBL; M17391; AAC63063.1;
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SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME
BINDING PROME S. MUTANS.
SIMILARITY: Contains 19 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                         European
                                                                                                                                                                                                                                                                                                                                                                 SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
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                                                                                                                                                                                                                           the Swiss Institute of Bioinformat pean Bioinformatics Institute. The non-profit institutions as long and this statement is not removed requires a license agreement (See an email to license@isb-sib.ch).
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6.5 X TANDEM REPEATS
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Pred. No.
     ase; Signal; Repeat; POTENTIAL.
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6.6e-06;
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28-FBB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-SI precursor (EC 2.4.1.5) (Gregovernasucrase) (Sucrose 6-glucosyltransferase)
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MEDININE-22299063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,
Carson M.B., Primeaux C., Tian R., White J., Roe B.A., Ferretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN-MI4255 , And MI8140 MT4467 / Serotype E, and MI8140 MEDLINE-98231643; PubMed-9570124 MEDLINE-98231643; PubMed-9570124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N. STRAIN=MT4239 /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=89137980; PubMed=2976010; Ueda S., Shiroza T., Kuramitsu H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus
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                  Shiroza T., Ueda S., Xuramitsu H.K.; "Sequence analysis of the gtfB gene from Streptococcus mutans."; J. Bacteriol, 169:4263-4270(1987).
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Proc. Natl.
                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
STRAIN=UA159 / ATCC 700610 /
                                                                                                                                                                                                                                                                                                                                                                                  "Molecular analyses of glucosyltransferase Streptococcus mutans.";
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                                                           MEDLINE=87308013; PubMed=3040685;
Shiroza T., Ueda S., Kuramitsu H.
                                                                                                                                                                                                                                                                                                                                                                    FEMS Microbiol.
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"Sequence analysis of the
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CATALYTIC (APPROXIMATE)
GLUCAN-BINDING (APPROXIMATE)
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A REPEAT.
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                                                                                                                                                                  99:14434-14439(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
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            THOUGHT
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REMBL; M22054; AAA88592.1; -.

REMBL; D88652; BAA26106.1; -.

REMBL; D88658; BAA26106.1; -.

REMBL; D88658; BAA26110.1; -.

REMBL; D88661; BAA26114.1; -.

REMBL; D8978; BAA26114.1; -.

REMBL; D8978; BAA26120.1; -.

REMBL; AE014940; AAA870706.1; -.

REMBL; M17361; AAA88589.1; -.

REMBL; M17361; AAA88589.1; -.

REMBL; M17361; BAA28189.1; -.

REMBL; M17361; BAA28189.1; -.

REMBL; M17361; BAA28189.1; -.

REMBL; M17361; G1gco_tydro_70.

REMBL; M17361; G1gco_tydro_70; 1.

REMBL; M173613; CW binding_1; 1.

REMBL; M17362324; G1gco_tydro_70; 1.

REMBL; M17362324; G1gco_tydro_70; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation—the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CARIES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH FORMS OF GLUCANS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-
BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 5 cell wall binding repeats.
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CAMPALYTIC (AMPROXIMATE).
GLUCAN-BINDING (AMPROXIMATE).
2.4 A, 1 C AND 1 AC REPEATS.
A REPEAT.
A REPEAT.
C REPEAT.
C REPEAT.
C REPEAT.
C REPEAT (IN STRAIN GS-5).
V -> I (IN STRAIN MT4239).
D -> V (IN STRAIN GS-5).
D -> V (IN STRAIN GS-5).
S -> A (IN STRAIN GS-5).
S -> PK (IN STRAIN GS-5).
SR -> PK (IN STRAIN GS-5).
SR -> PK (IN STRAIN GS-5).
                                                                                                                                                                                                                             A -> V

R -> V

R -> V

R -> V
                               AND
UMA
                                                                                                                                                                          AND MT8148).

R -> K (IN STRAINS MT4245,

AND MT8148).
                                                                                                                                                                                                                                                                                                                                                                         (IN STRAIN GS-5).
(IN STRAIN MT4239).
(IN STRAIN GS-5).
(IN STRAIN GS-5).
                                                                                    (IN
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IN STRAIN MT4251).
IN STRAINS MT4245 AND MT4251).
IN STRAINS MT4245 AND MT4251).
IN STRAINS MT4245 AND MT4251).
IN STRAINS MT4245, MT4251, MT4
                            N STRAIN GS-5).
N STRAIN MT8148).
N STRAIN MT8148).
N STRAIN MT8239).
N STRAIN MT4239).
STRAIN MT8148)
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5 AND MT4251).
5 AND MT4251).
                                   MT4239,
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RESULT 5
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Best Local
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                                                                                                                                                                                                                                                                                                              Gilmore K.S., Russell R.R., Ferretti J.J.;
"Analysis of the Streptococcus downei gtfS gene,
glucosyltransferase that synthesizes soluble gluc
Infect. Immun. 58:2452-2458/19001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VARIANT
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01-DEC-1992 (Rel. 24,
28-FEB-2003 (Rel. 41,
Glucosyltransferase-S
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                                              This SWISS-PROT entry is copyright. It is produced through a c between the Swiss Institute of Bioinformatics and the EMBL the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and fo
                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus downer
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                                                                                                                              1,6-GLUCOSE).

- I SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.

- I SIMILARITY: Contains 10 cell wall binding repeats.
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                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=1317;
                                                                                                                                                                                                                                                                                                                                                                                                                                streptococcus
                                     entities requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sucrose
EMBL; M30943; AAA26898.1;
                        or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                      ect. Immun. 58:2452-2458(1990).

ect. Immun. 58:2452-2458(1990).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGH FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGH TO PLAY A KEY ROLL IN THE DEVELOPMENT OF THE DEVILOPMENT OF BACTERIAL CELLS AND FOOD DEBRIS.

AGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALLYTIC ACTIVITY: Sucrose + { (1,6)-alpha-D-glucosyl}(N+1).

FINCTOSE + { (1,6)-alpha-D-glucosyl}(N+1).

ENZYME REGULATION: GLUCAN SYNTHESIS BY GTF-S IS INDEPENDENT OF
                                                                                                                                                                               PRIMER GLUCAN UNLIKE GTF-I.
DISEASE: DENTAL CARIES.
MISCELLANEOUS: GTF-S SYNTHE
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                                                                                                                                                                                  GTF-S SYNTHESIZES WATER-SOLUBLE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                (Streptococcus sobrinus); Lactobacillales; Strept
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  68.2%;
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precursor (EC 2.4.1.5)
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V -> I (IN STRAIN MT8148).
D -> N (IN STRAIN MT8239).
V -> I (IN STRAIN MT8239).
V -> I (IN STRAIN MT8239 AND MT8148).
S -> P (IN STRAIN MT8148).
HASIJELMVFRNOGELIGMEVVERFRESHOVYPRNASHD
ORNHWDYDYRRDFGRGSSSAVRFRHSRNGFEDNFFRF ->
HASILELMVFRLRESSLQSVKVVSNTWILIPEMKFVIVM
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MT8148)
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                                       (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcaceae;
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STRAIN MT8148).
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                                                                                                                                                              SOME
                                                                                                                                                                                                                                                                                             THAT ARE THOUGHT
                                                                                                                                                                                      GLUCANS
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                                                                               restrictions on
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L outstation -
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Best Local S
Matches 14
                                                                              SEQUENCE FROM N.A.

SEQUENCE FROM N.A.

STRAIN=UAL59 / ATCC 700610 / Serotype C;

STRAIN=E2295063; PubMed=12397186;

MEDLINE=22295063; PubMed=12397186;

Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,

Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,

Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,

Carson M.B., Primeaux C., Tian R., White J., Roe B.A., Ferretti

Ti S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
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Pfam; PF02
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                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.
STRAIN=MT4239 /
MT4467 / Serotyp
                                       Proc. Natl. A -! - FUNCTION:
                                                              pathogen.";
Proc. Natl. Acad.
                                                                                                                                                                                                                                                                                                              Streptococcus mutans." FEMS Microbiol. Lett.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=91100958; PubMed=2148600;
Honda O., Kato C., Kuramitsu H.K.;
"Nucleotide sequence of the Streptococcus
the glucosyltransferase-S enzyme.";
J. Gen. Microbiol. 136:2099-2105(1990).
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Pro; IPR003318; Glyco_hydro_70
PF01473; CW_binding_1; 8
PF02324; Glyco_hydro_70; 1.
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U.S.A. 99:1377.
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               99:14434-14439(2002).
KTRACELLULAR GLUCANS, THAT
DEVELOPMENT OF THE DENTAL
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MT4245) T -> A MT4251,

(IN STRAINS MT4467 AND

GS-5, M

MT4239,

MT4251)

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EMBL; M29296; AAA26895.1; -.

EMBL; D88653; BAA26103.1; -.

EMBL; D88659; BAA26107.1; -.

EMBL; D88659; BAA26111.1; -.

EMBL; D89979; BAA26115.1; -.

EMBL; D89979; BAA26115.1; -.

EMBL; D89979; BAA26115.1; -.

EMBL; AB014932; AAMS8619.1; -.

InterPro; IPR002479; CW binding.

InterPro; IPR002479; CW binding.

InterPro; IPR00318; Glycomydro_70.

Pfam; FP0324, Glycomydro_70; 1.

Pfam; FP0324; Glycomydro_70; 1.
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SIMILARITY: Contains 6 cell wall binding 1
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SUBCELLULAR LOCATION: Secreted.
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1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S (
WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI
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FORMS OF GLUCANS.
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MT4251, MT4467 AND MT8148).
I-> V (IN STRAINS GS-5, MT4239)
MT4251, MT4467 AND MT8148).
K-> E (IN STRAIN MT4467).
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-Y119 NPVOP
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01-NOV-1997 (Rel. 35, Last sequence update)
01-NOV-1997 (Rel. 35, Last annotation update)
01-NOV-1997 (Rel. 35, Deptein precursor (ORFI19).
Hypothetical 59.0 kDa protein precursor (ORFI19).
Orgyia pseudotsugata multicapsid polyhedrosis virus
Viruses, dsDNA viruses, no RNA stage; Baculoviridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for commodified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                              Viruses; dsDNA viruses, no Nucleopolyhedrovirus.
                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
MEDLINE=97271300; PubMed=9126251;
Ahrens C.H., Russell R.R., Funk C.J.,
Rohrmann G.F.;
                                                                                                                                                                           entities requires a license agreement or send an email to license@ish-sih-ch
                                                                                                                                                                                                                                                                                    polyhedrosis virus genome.
Virology 229:381-399(1997)
                                                                                           SEQUENCE
                                                                                                                 Hypothetical protein; Signal. SIGNAL 1 20
                                                                                                                                                                                                                                                                        -!- SIMILARITY: TO CORRESPONDING ORF IN ACMNPV.
                                                                                                                                                                                                                                                                                                           "The sequence of the Orgyia pseudotsugata multinucleocapsid
                                                                                                                                         Pfam;
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E -> K (IN STRAIN MT4251).
LG -> IR (IN STRAIN MT4251).
G -> R (IN STRAIN MT4245).
G -> R (IN STRAIN MT4245).
H -> Q (IN STRAIN MT4239).
Y -> C (IN STRAIN MT4239).
Y -> C (IN STRAIN MT4251 AND MT4467).
F -> L (IN STRAIN MT4251 AND MT4467).
C -> P (IN STRAIN MT4245).
K -> T (IN STRAIN MT4245).
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N -> D (IN STRAIN MT4245).
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Pred. No. 0.01;
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                                                                                                       HYPOTHETICAL PROTEIN ORF119
                                                          Score 49.5;
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01-FEB-1996
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Sauerborn M., von Bichel-Streiber C.;
"Nucleotide sequence of Clostridium difficile toxin
Nucleic Acids Res. 18:1629-1630(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
STRAIN=VPI 10463;
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TOXA OR TCDA
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EMBL; M30307;
EMBL; X92982;
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von Eichel-Streiber C.;
submitted (JAN-1997) to the EMBL/GenBank/DDBJ databases.
Submitted (JAN-1997) to the EMBL/GenBank/DDBJ databases.
1- DOMAIN: THE C-TERMINAL PART OF TOXIN A CONSISTS OF A 833 AA
-I- DOMAIN: THE STRUCTURE. THIS PART OF TOXIN A IS COMPOSED OF FIV
DIFFERENT OLIGOPEPTIDES.
-I- DISEASE: CLOSTRIDIUM DIFFICILE PRODUCES TWO TOXINS, AN
-I- DISEASE: CLOSTRIDIUM DIFFICILE PRODUCES TWO TOXINS TWO 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=9129305; PubMed=2105276; Dove C.H., Wang S.Z., Price S.B., Wilkins T.W., Johnson J.L.;
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Bacteria; Firmicutes;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 entities requires a license agreement (So or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                between the Swiss Institute of Bioinformatics the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
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                                                                                                                                                                                                                                                                                                                        InterPro; IPR002479; CW_binding. pfam; pF01473; CW_binding_1; 28. pfam; pF04488; Gly_transf_sug; 1
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; AAA23283.1; -.
; CAA63564.1; -.
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There are no restrictions
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http://www.isb-sib.ch/announce/
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RESULT 9
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-!- CATALYTIC ACTIVITY: ATP + 7,8-diaminononanoate + CO(2) = ADP + phosphate + dethiobiotin.
-!- COPACTOR: Magnesium (By similarity).
-!- COPACTOR: Magnesium (By similarity).
-!- SIMILARITY: BELONGS TO THE DETHIOBIOTIN SYNTHETASE FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Dethiobiotin synthetase (EC 6.3.3.3) (Dethiobiotin synthase)
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STRAIN=ATCC 824 /
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BIOD OR CAC1361.
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MEDLINE=21359325; PubMed=11466286;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Clostridium
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HAMAP; MF_00336; -; 1.
InterPro; IPR004472; BioD.
InterPro; IPR002586; CbiA_P.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; AE007647; AAK79329.1; PIR; F97067; F97067.
                                                                                                                                                                                                                                                                                                                                                                                                                                01-FEB-1995
MEDLINE=94016561; PubMed=8411153;
Lehnherr H., Maguin E., Jafri S.,
                                                                                                                                                                                 Viruses; dsDNA viruses,
Pl-like viruses.
                                                                                                                                                                                                                                                   Bacteriophage P1
                                                                                                                                                                                                                                                                                                                             Death ON curing protein.
                                                                         SEQUENCE FROM N.A.
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26677 MW;
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bioD; 1.
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                  Yarmolinsky M.B.;
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Soucaille P., Daly M.J.,
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Yajima S., Lee S.H., Minowa T., Wish family transcription factors dopamine receptor gene.";
DNA Cell Biol. 17:471-479(1998).

Mouradian s regulate

M.M.; expression

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MEDLINE=98290554; PubMed=9628590;

SEQUENCE FROM N.A. NCBI_TaxID=10090;

(ISOFORM 1).

[SSUE=Neuroblastoma]

DNA Cell Biol.

Chestler A., Charnay P.;
Chestler A., Charnay P.;
Unifference in the genomic organizations of the factors Spl and Krox-20; possible evolutionary factors Spl and Krox-20; possible evolutionary factors Spl and Krox-27(1992)
DNA Seq. 2:325-327(1992)
DNA Seq. 2:325-327(1992)

PUNCTION: BINDS TO GC BOX PROMOTERS ACTIVATES MRNA SYNTHESIS FROM GENES RECOGNITION SITES.

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transcription ance.";

SEQUENCE OF 681-781 FROM N.A. MEDLINE=92338398; PubMed=1633330;

Eukaryota; Metazoa; Chordata; Mammalia; Eutheria; Rodentia;

Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus

(Mouse)

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J. Mol. Biol.
-1- FUNCTION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.inhorsend an email to licenses...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "plasmid addiction genes of bacteriophage P1: doc, which causes death on curing of prophage, and phd, which prevents host death
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SP1 MOUSE STANDARD;

089090; Q62251; Q04127;

15-SEP-2003 (Rel. 42, Created)

15-SEP-2003 (Rel. 42, Last seq

15-SEP-2003 (Rel. 42, Last ann
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TIGREAMS; TIGRO1550; I
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InterPro; IPR006440;
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9; Conserve
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WELL-BEING OF CARRIERS OF THE ADDICTING PLASMID.
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RESULT
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Best Local S
Matches
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T 01-AUG-1988 (Rel. 08, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Transcription factor Sp1.
Sp1 OR TSFP1.
Homo exercises
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WGD; MGI:98372; Spl.
GO; GO:0005634; C:nucleus; IDA.
GO; GO:0003700, F:transcription factor; IMP.
GO; GO:0003700, F:regulation of transcription, DNA-dependent; IMP.
GO; GO:0006355; P:regulation of transcription, DNA-dependent; IMP.
InterPro; IPR007087; Znf_C2H2.
Pfam; PF00096; Zf-C2H2; 3.
ProDom; PD000003; Znf_C2H2; 3.
PROSITE; PS000028; ZINC_FINGER_C2H2_1; 3.
PROSITE; PS0157; ZINC_FINGER_C2H2_2; 3.
PROSITE; PS0157; ZINC_FINGER_C2H2_2; 3.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AF062566; AAC16484.1; -.
EMBL; S79832; AAB35321.1; -.
EMBL; X60136; CAA42721.1; -.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                between
                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
            TISSUE=Cervical carcinoma;
Haggart M.H., Ladurner A.G
Submitted (APR-2000) to th
                                                                                                                                                                                                                                                                                                                                                                                            CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                      VARSPLIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alternative
                                                                                         Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                    SEQUENCE OF 4-785
                                                                           NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUBCELLULAR LOCATION: Nuclear.
ALTERNATIVE PRODUCTS:
Event=Alternative splicing; Named isoforms=2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SIMILARITY: Contains 3 C2H2-type zinc fingers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SIMILARITY: BELONGS TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SWISS-PROT entry is copyright. It is produced through a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ime=2; Synonyms=Sp1-S;
IsoId=O89090-2; Seque
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IsoId=O89090-1; Sequence=Displayed;
                                                                                                                                                                                                                                                                          179
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                                                                                                                                                                                                                                                                                                                           | Similarity
9; Conserv
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O-GLYCOSYLATED; CONTAINS N-ACETYLGLUCOSAMINE SIDE CHAINS
                                                                                                                                                                                                                                                                        QTVDĠQQLQFAATGAQVQ 196
                                                                                                                                                                                                                                                                                                    RTINGOLLYFRANGVOVK 21
                                                                                                                                                                                                                                                                                                                                                                                                                    splicing.
624 648
654 678
684 706
57 370
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781
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80486
                                                                                           Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                          42.0%;
               to the EMBL/GenBank/DDBJ
                                                     N.A.
                                                                                                                                                                                                                                                                                                                                                                                  WW.
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                                                                                                                                                                                                                                                                                                                               Score 47; DB Pred. No. 8.9; 4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                   C2H2-TYPE
C2H2-TYPE
C2H2-TYPE
                                                                                                                                                                                                                                                                                                                                                                                  Missing (in isoform 2).
/FTId=VSP_007376.
V -> G (IN REF. 2).
14CD12BBC58CF921 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SP1 FAMILY OF
                                                                                          Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                         (in isoform
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8.9;
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                                                                                                                                                                                                                                                                                                                                                         Length 781;
                    databases
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TRANSFAC; T00 GlycoSuiteDB;

T00759;

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RARE REPRESENTATION OF THE PROPERTY AND THE PROPERTY AND SOCIOUS CONTRACTORS OF THE PROPERTY O
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[3]
                                      EMBL; AF252284; AAF67726.1; -.
EMBL; AB039286; BAB13476.1; -.
EMBL; AB039286; BAB13476.1; -.
EMBL; AF255688; AAF78781.1; -.
EMBL; AF252134; CAB75345.1; -.
EMBL; A2722134; CAB75345.1; -.
EMBL; A29635; A29635
PDB; 1SP1; 21-APR-97.
PDB, 1SP2; 21-APR-97.
PDB, 1SP2; 21-APR-97.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 1-109 FROM N.A.
Nicolas M., Noe V., Ciudad C.J.;
"Expression of transcription fact
submitted (APR-2000) to the EMBL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Takahara T., Kanazu S., Yanagisawa S., P
"Hererogeneous Spi mmNas in human HepG2
"Menterogeneous Spilcings";
homotypic trans-spilcing;
J. Biol. Chem. 275:38067-38072(2000).
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SEQUENCE OF 1-558 FROM N.A.
MEDLINE=20545561; PubMed=10973950;
Takahara T., Kanazu S., Yanagisawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 90-785 FROM N.A., AND SEQUENCE MEDLINE=88080466; PubMed=3319186;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDILINE=97218212; PubMed=9065444;
Narayan V.A., Kriwacki R.W., Caradonna J.P.;
"Structures of zinc finger domains from transcription factor Spl.
Insights into sequence-specific protein-DNA recognition.";
J. Biol. Chem. 272:7801-7809(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     responds to MAZ and Spl.";
J. Biol. Chem. 271:4417-4430(1996).
J. FUNCTION: BINDS TO GC BOX PROMOTERS
ACTIVATES MRNA SYNTHESIS FROM GENES
RECOGNITION SITES. CAN INTERACT WITH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "O-glycosylation of eukaryotic transcription factors: for mechanisms of transcriptional regulation."; cell 55:125-133(1988).
                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN the European Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entities requires a license agreement (See http://www.isb-sor send an email to license@sisb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=89003041;
Jackson S.P., Tji
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEROTONIN RECEPTOR PROMOTER.
-1- SUBCELLULAR LOCATION: Nuclear.
-1- PTM: O-GLYCOSYLATED; CONTAINS N-ACETYLGLUCOSAMINE S
-1- SIMILARITY: BELONGS TO THE SP1 FAMILY OF C2H2-TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=96224025;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRUCTURE BY NMR OF 654-684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Parks C.L., Shenk T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "The serotonin la receptor gene contains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IDENTIFICATION OF
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(FEB-2000)
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of the 5' end of l
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PubMed=8626793;
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gmbL/GenBank/DDBJ databases
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EMBL/GenBank/DDBJ
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J databases.
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E ZINC-FINGER
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Best Local (
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PROSITE; PS50157; ZINC_FINGER_C2H2_2; 3.

PROSITE; PS50157; ZINC_FINGER_C2H2_2; 3.

PROSITE; PS50157; ZINC_FINGER_C2H2_2; 3.

PROSITE; PS50157; ZINC_FINGER_C2H2_2; 3.

PROSITE; PS50157; ZINC_FINGER_C2H2_TYPE 1.

ZN FING 626 650 C2H2_TYPE 1.

ZN FING 656 680 C2H2_TYPE 3.

ZN_FING 656 680 C2H2_TYPE 3.

CONFLICT 366 366 D -> G (IN REF. 3; AA SEQUENTER)

CONFLICT 670 670 S.-> F (IN REF. 3; AA SEQUENTER)

STEAND 657 657

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MIM; 189906; -.
GO; GO:0005634; C:nucleus; NAS.
GO; GO:0005634; F:RNA polymerase II transcriptiou...
GO; GO:0003702; F:RNA polymerase II transcriptioty; NAS.
GO; GO:0016563; F:transcriptional activator activity; NAS.
GO; GO:0006355; P:regulation of transcription, DNA-dependent; NAS.
TotalPro; IPRO07087; Znf C2H2.
TotalPro; TAC. 7f-C2H2; 3.
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Q01714;
01-APR-1993
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SEQUENCE
                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa;
Mammalia; Eutheria;
                                    between
                                                  This
                                                                                                                                                                                                       Imataka H., Sogawa K., Yasumoto K., Kikuchi Y., Kobayashi A., Hayami M., Fujii-Kuriyama Y.; "Two regulatory proteins that bind to the basic (BTE), a GC box sequence in the promoter region
                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                      NCBI_TaxID=10116;
                                                                                                                                                                                                                                                                                                                                              Rattus norvegicus (Rat).
                                                                                                                                                                                                                                                                                                                                                                    Transcription
                                                                                                                                                                                                                                                                                                                                                                               01-APR-1993
15-SEP-2003
                                                                                                                                                                                                                                                         MEDLINE=93010958; PubMed=1356762;
               ween the Swiss Institute of Bioinforma
European Bioinformatics Institute. The
by non-profit institutions as long
                                                                                                                      RECOGNITION SITES.
SUBCELLULAR LOCATION:
PTM: O-GLYCOSYLATED; (
                                                                        SIMILARITY: Contains 3
                                                                                                                                                        FUNCTION: BINDS TO GC BOX PROMOTERS ACTIVATES MRNA SYNTHESIS FROM GENES
                                                                                                SIMILARITY:
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                                       SWISS-PROT entry is copyright. It is produced through a collaboration sen the Swiss Institute of Bioinformatics and the EMBL outstation
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                                                                                                             SIMILARITY)
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annotation updat
                                                                        C2H2-type zinc fingers
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                                                                                                   FAMILY OF
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                                                                                                                                                           ELEMENTS AND
THAT CONTAIN
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                                                                                                   C2H2-TYPE
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                                                                                                                                                                                                           transcription element of the rat P-4501A1
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; Murinae; Rat
   Λ̈́q
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                                                                                                   ZINC-FINGER
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                                          collaboration
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RESULT 14
DLHH_AQUAE
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HSSP; P08047; 1SP1.
TRANSFAC; T00754; ...
InterPro; IPR007087; !
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ZN_FING
ZN_FING
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ProDom; PD000003; Znf C2H2; 2.

SMART; SM00355; ZnF C2H2; 3.

PROSITE; PS00028; ZNNC FINGER C2H2 1; 3.

PROSITE; PS50157; ZNC FINGER C2H2 2; 3.

Transcription regulation; Activator; Zinc-finger; Mona-binding; Nuclear protein; Repeat; Glycoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                    15-DEC-1998 (Rel. 37, Created)
15-DEC-1998 (Rel. 37, Last sequence up
16-OCT-2001 (Rel. 40, Last annotation
Putative carboxymethylenebutenolidase
hydrolase) (DLH).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HHTG
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Hypothetical
ACT_SITE 1
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Bacteria; Aquificae;
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                                                                                                                              modified and this statement entities requires a license
                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                  Deckert G., Warren P.V., Gaasterland T., Young W.G., Lenox Graham D.B., Overbeek R., Snead M.A., Keller M., Aujay M., Feldman R.A., Short J.M., Olson G.J., Swanson R.V.; "The complete genome of the hyperthermophilic bacterium Aqu
                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=63363;
                                              InterPro; IPR002925;
InterPro; IPR000379;
Pfam; PF01738; DLH; 1
                                                                                                                      entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                         oxohex-2-enedioate.
-I- SIMILARITY: BELONGS TO THE DIENELACTONE HYDROLASE FAMILY
                                                                                                                                                                                                                                                 Nature 392:353-358(1998).
                                                                                                                                                                                                                                                                                                                                     MEDLINE=98196666; PubMed=9537320;
                                                                                                                                                                                                                                                                                                                                                             SEQUENCE
                                                                                                  EMBL;
                                                                                                                                                                                                                                                                           aeolicus
                                                                                    PIR; F70471;
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81015 MW;
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50.0%;
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67 BY S
99 BY S
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C2H2-TYPE 2.
C2H2-TYPE 3.
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Pred. No.
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USF AQUPY
ID VSF AQUPY
ID VSF AQUPY
ID AC 46209;
DT 01-NOV-1995 (Rel. 32, Created)
DT 01-NOV-1995 (Rel. 32, Last sequence update)
DT 01-OCT-1996 (Rel. 34, Last annotation update)
DE 2014 (Rel. 34, Last annotation update)
DE 21-OCT-1996 (Rel. 34, Last annotation update)
DE 21-OCT-19
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Schmitt R., schmitt R., schmitt R., schmitt R., schmitt R., structure and hyperthermophily: analysis of a single "Flaggellin gene and its product in Aquifex pyrophilus.", J. Bacteriol. 177:6630-6637(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=96062250; PubMed=7592443;
Behammer W., Shao Z., Mages W., Rachel R., Stetter K.O.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Aquifex pyrophilus.
Bacteria; Aquificae; Aquificales; Aquificaceae; Aquifex.
NCBI_TaxID=2714;
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53.3%;
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Pred. No. 3
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Maximum Match 100%
Listing first 45 summaries
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                              Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.
                                                                                                       SPTREMBL 23:*
1: sp_archea:*
2: sp_bacteria:*
3: sp_fungi:*
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5: sp_invertebrate
6: sp_mammal:*
7: sp_mhc:*
8: sp_organelle:*
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17: sp_archeap:*
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Gapop 10.0 , Gapext 0.5
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171.224 Million cell updates/sec
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112
1 TGARTINGQLLYFRANGVQVKG 22
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sp_mammal:*
sp_mhc:*
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sp_rvirus:*
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SUMMARIES
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68	68	72	72	72	72	73	75	75	75	76	80	18	82	87	90	Score
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565	563	1577	1508	1508	1477	1449	1338	1290	726	1590	1518	2835	1599	1590	591	Query Match Length DB
16	2	N	N	2	Ν	N	N	2	16	N	2	N	ы	N	2	Bd
Q8DRV2	Q54447	Q54178	052224	Q9EZH5	Q9L466	Q55264	Q9WXJ4	Q48756	6Mnd8Ö	Q55263	Q00600	Q8G9Q2	Q00599	Q59983	QBVUH3	ID
Obdry2 streptococc	Q54447 streptocccc	Q541/8 streptocccc							Q8duwy streptococc	Q55263 streptococc						Description

RESULT 2 Q59983

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46	46	46	46	46	46	47	47	47	47	47	47	47	47	49	49	50	53	54	55	57	57	57	60.5	64	65	65.5	66	88
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ALIGNMENTS

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1 TGARTINGOLLYFRANGVQVKG 22 : :: 465 TGARVVNGORLYFKSNGVQAKG 486	Query Match 80.4%; Score 90; DB 2; Length 591; Best Local Similarity 72.7%; Pred. No. 4.6e-06; Matches 16; Conservative 3; Mismatches 3; Indels 0; Gaps 0;	SEQUENCE 591 AA; 67094 MW; 0933DCE4421DAF30 CRC64;	Transferase.	Pfam; PF02324; Glyco_hydro_70; 1.	Pfam: PF01473; CW binding 1; 9.	InterPro; IPR002479; CW_binding. InterPro; IPR003318; Glyco hydro 70.	EMBL; AB078507; BAB83942.1;		H	Tanda H., Yamashita Y., Shibata Y., Nakano Y., Koga T.;	SEQUENCE FROM N.A.	[1]	NCBI_TaxID=1309;	Streptococcus.	Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;			Olicory transferage SI (Fragment).	(TIEMBLIEL.	(TERMBLECT, 20, Crea	,	Q8VUH3 PRELIMINARY; PRT; 591 AA.	H3	TLT 1

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RESULT
Q00599
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Query Match
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01-NOV-1996
01-OCT-2002
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InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 16.
Pfam; PF02324; Glyco hydro 70; 1.
Glycosyltransferase; Signal; Transfe
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Q59983
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Q00599;
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                 WEDLINE-92148377; PubMed=1838391;
Giffard P.M., Simpson C.L., Milward C.P., Jacques N.A.;
Giffard P.M., Simpson C.L., Milward C.P., Jacques N.A.;
"Molecular characterization of a cluster of at least two
glucosyltransferase genes in Streptococcus salivarius ATCC
J. Gen. Microbiol. 137:2577-2593(191).

-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE
PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE
PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE
THETIR ABILITY TO ADHERE TO SMOTH SURPACES AND MEDIATE
AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

-i- CATALYTIC ACTIVITY: SUCROSE + ((1,6)-ALPHA-D-GLUCOSYL)(
                                                                                                                                                                                                                                                                                                                                                                                          01-NOV-1996 (TYEMBLIFE). 01, Created)
01-NOV-1996 (TYEMBLIFE). 01, Last sequence update)
01-OCT-2002 (TYEMBLIFE). 22, Last annotation update)
Glucosyltransferase S precursor (EC 2.4.1.5) (GTF) (Dextransucrase)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus sobrinus.";
DNA Seq. 4:19-27(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sato S., Inoue M., Handa N., Aizawa Y., Isobe DNA sequence of the glucosyltransferase gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=94146405; PubMed=8312602;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN=OMZ176
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                                                                                                                                                                                             Giffard P.M., Allen D.M., Milward C.P., Simpson C.L., J "Sequence of the gtfK gene of Streptococcus salivarius evolution of the gtf genes of oral streptococci."; J. Gen. Microbiol. 139:1511-1522(1993).
                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
STRAIN=ATCC 25975;
MEDLINE=93381463; PubMed=8371114;
                                                                                                                                                                    SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                       Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                   Streptococcus salivarius
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1590 AA;
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    01, Last sequence update
    22, Last annotation updat
    precursor (EC 2.4.1.5).

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                      6) -ALPHA-D-GLUCOSYL) (N)
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Best Local
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EMBL; Z11873; CAA7/>-...
EMBL; M64111; AAA26897.1; -...
EMBL; M64111; AAA26897.1; -...
InterPro; IPR002479; CW_binding.
InterPro; IPR00318; G1yco hydro_70.

rfam; PF01473; CW_binding_1; 14.

rfam; PF01473; CW_binding_1; 14.

rfam; PF01473; G1yco hydro_70; 1.

rfam; PF01473; CW_binding_1; Signer, Signer
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Best Local
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Q8G9Q2;
01-MAR-2003
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01-NOV-1996 (
01-NOV-1996 (
01-OCT-2002 (
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Molecular characterisation of DSR-E, synthesising dextransucrase with two J. Bacteriol. 184:5753-5761(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=22231661; PubMed=12270834; Bozonnet S., Dols-Lafargue M., Fabre Mondan P., Willemot R.M.;
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01-MAR-2003
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                                                        glucosyltransferase) GTFJ.
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Bacteria; Firmicutes; Lact
                  Streptococcus salivarius.
Bacteria; Firmicutes; Lactobacillales;
                                                                                               Glucosyltransferase
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1, Z11873; CAA77898.1; -.

1, Z11873; CAA770.1; -.

1, M64111: AAA77.20.1; -.
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SUBCELLULAR LOCATION: EXTRACELLULAR.
DISEASE: DENTAL CARIES.
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17; Conserv
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77.3%;
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72.7%;
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f (EC 2
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.4.1.5) (GTF) (Dextransucrase)
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3; Mismatches
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                            Streptococcaceae,
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Best Local S
Matches 16
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R InterPro; IPR002479; CW binding.

R Pfam; PF01473; CW binding 1; 13-

R Pfam; PF02324; Glyco-hydro 70; 1.

I Transferase; Glyco-hydro 70; 1.

I Transferase; Glyco-syltransferase; Repeat; Dental caries.

REPEAT 1307 1338 PEPEAT 1.

REPEAT 1339 1352 PEPEAT 2.

REPEAT 1339 1352 PEPEAT 3.

REPEAT 1404 1417 PEPEAT 5.

REPEAT 1437 1468 PEPEAT 5.

REPEAT 1469 1482 PEPEAT 6.
Query Match
Best Local S
Matches 15
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"Molecular characterization of a cluster of at least two
glucosyltransferase genes in Streptococcus salivarius ATCC
J. Gen. Microbiol. 137:2577-2593 (1991)
-i- PUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE
PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE
THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q55263;
01-NOV-1996
01-JAN-1998
01-OCT-2002
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-!- DISEASE: DENTAL CARIES.
EMBL; Z11873; CAA77900.1; -.
EMBL; M64111; AAA28896.1; -.
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FRUCTOSE + ((1,6)-ALPHA-D-GLUCOSYL)(N+1).
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                                                                                                                       "DNA and amino-acid sequences of water-insoluble-glucan synthetase produced from Streptococcus sobrinus ATCC 33478 "; Ann. Kagoshima Univ. Dental School 16:23-29(1996).

EMBL; D63570; BAA08792.1; -.

InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.

Pfam; PF01473; CW_binding_1; 15.

Pfam; PF01473; Glyco_hydro_70; 1.

SEQUENCE 1590 AA; 176058 MW; 9DF7A3F2C6E4FD43 CRC64;
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15; Conser
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                                                                  Score 76; DB 2;
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annotation update)
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              Indels
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AC QBDU9

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Best Local S
Matches 15
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QBDUW9;
01-MAR-2003
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STRAIN-UANIS9 / ANTCC 700610 / Serotype C;

MEDLINE-22295063; PubMed=12397186;

MEDLINE-22295063; PubMed=12397186;

Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,

Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,

Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,

Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti

15 S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti

"Genome sequence of Streptococcus mutans UA159, a cariogenic of pathogen.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Proc. Natl Acad Sci U.S.A. 99:14434-14439(2002).
EMBL; AE014918; AAN58492.1; -.
Complete proteome.
SEQUENCE 726 AA; 79787 MW; B2AB7C06F6E7CB4E CRC6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GBPD OR SMU.772
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Q48756;
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01-NOV-1996 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                         MEDLINE=97136686; PubMed=8982063;
Monchois V., Willemot R.M., Remaud-Simeon M., Croux C., Monsan P.;
Monchois V., Willemot R.M., Remaud-Simeon M., Croux C., Monsan P.;
"Cloning and sequencing of a gene coding for a novel dextransucrase
from Leuconostoc mesenteroides NRRL B-1299 synthesizing only alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lactobacillales; Leuconostoc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dextransucrase.
                                                                                                                                                      EMBL; U38181; AAB40875.1;
InterPro; IPR002479; CW binding.
InterPro; IPR003218; Glyco hydro 70.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF02324; Glyco hydro 70; 1.
Pfam; PF02324; Glyco hydro 70; 1.
                                                                                                                                                                                                                                                                    6) and alpha (1-3) 1
Gene 182:23-32(1996)
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                                                                         Similarity
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                                                     Conservative
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68.2%;
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tein D, BglB-like protei
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Pred. No. (
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J.J.;
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PRELIMINARY;

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RESULT

Q9WXJA

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ID WXJA

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Q55264
ID Q5
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                                                                                                SQ PTT DRR RELEASE OF THE PTT RE
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Best Local S
Matches 14
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Query Match
Best Local
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Q9WXJ4;
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Q55264;
01-NOV-1996
01-NOV-1996
01-OCT-2002
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01-OCT-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Inoue M., Fukui K., Miyagi A.;
                                                                                             CHAIN
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-95122197; PubMed=7822030; Simpson C.L., Giffard P.M., Jacques Netreptococcus salivarius ATCC 25975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Streptococcus salivarius.
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                         Infect. Immun. 63:609-621(1995).
EMBL; L35495; AAC41412.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                "Streptococcus sativarius ATCC 25975 possesses at least two genes coding for primer-independent glucosyltransferases.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=1304;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glucosyltransferase
                                                                                                                                                                                                                      InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10
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      Similarity
                                                                                                                                                                                                    Transferase.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1338 AA;
                                                                                                    1
36 14
1449 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    criceti.
                                                                                                                                   1449
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         67.0%;
63.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      148558 MW; 0A90C8E10E15D99B CRC64;
                                                                                                                                                              ü
                                                                                         35 POTENTIAL.
49 GLUCOSYLTRANSFERASE.
159984 MW; DD62F07306E86A4
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      65.2%;
68.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01, Created)
01, Last sequence update)
22, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Created)
Last sequence update)
Last annotation updat
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EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Jacques N.A.;
          Score 73;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22
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                                                                                                           DD62F07306E86A46 CRC64;
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          ; DB 2;
. 0.0077;
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0.0033;
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                                            Length 1449;
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                                                                                                                Query Match
Best Local S
Matches 15
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a Willemot R.M., Monsan P.;

sequence analysis of the gene encoding alternansucrase, a "Sequence analysis of the gene encoding alternansucrase, a "Sequence analysis of the EMBL/GenBank/DDBJ databases."

I Submitted (OCT-1999) to the EMBL/GenBank/DDBJ databases.

EMBL; AJ250172; CAB76565.1; - GMBL; AJ250172; CMBL; AJ250170; - GMBL; AJ250172; - GMBL; AJ250170; - GMBL; 
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Query Match
Best Local S
Matches 15
                                                                                                          Q9EZH5 PRELIMINAKY;
Q9EZH5;
Q1=MAR-2001 (TrEMBLrel. 16, C
01-MAR-2001 (TrEMBLrel. 16, L
01-OCT-2002 (TrEMBLrel. 22, I
Dextransucrase Dsrb742.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q9L466;
Q9L466;
01-0CT-2000
01-0CT-2000
01-0CT-2002
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Bacteria; Firmicutes; Lactobacillales; Leuconostoc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Dextransucrase (EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
STRAIN=NRRL B-1355;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=1245;
                                                                                                                                                                                                                                                                                                                                        Kim H.-S., Kim D., Ryu H.-J., Robyt J.F.; "Leuconostoc mensenteroides B-742CB, a dextransucrase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lactobacillales; Leuconostoc
                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=B-742CB;
                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DSRB742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=1245;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGHQNINGQELFFDNNGVQVKG
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                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGLVNINGNLKYFQANGRQVKG 1389
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) (TrEMBLrel. 15,
2 (TrEMBLrel. 22,
rase (EC 2.4.1.5).
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                                64.3%;
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Pred. No.
                                                                                                                                                                                                                                                                                                              EMBL/GenBank/DDBJ
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Last annotation update)
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                                   Score 72; DB 2;
Pred. No. 0.012;
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                Mismatches
                                                                                                                                E2FCFA0F87AE4F3A CRC64;
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                6;
                                                                      Length 1508;
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                                                                                                                                                                                                                                                                                                                                                 gene.";
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B-1355.";
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PRI RELEGIO
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Best Local S
Matches 15
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052224;
01-JUN-1998 (TrEMBLrel. 06, Created)
01-JUN-1998 (TrEMBLrel. 06, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q54178 PRELIMINARY;
Q54178; Q54247;
Q1-NOV-1996 (TEMBLEEL. (
Q1-NOV-1996 (TEMBLEEL. (
Q1-OCT-2002 (TEMBLEEL. (
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Bacteria; Firmicutes; Lact
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                                                                   STRAIN=CHALLIS;
MEDLINB=927637; PubMed=1534326;
Sulavik M.C., Tardif G., Clewell D.B.;
Sulavik M.C., Tardif G., rgg, which regulates expression of "Identification of a gene, rgg, which regulates expression of glucosyltransferase and influences the Spp phenotype of Strep glucosyltransferase and influences the Spp phenotype of Strep
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glucosyltransferase.
                                                                                                                                                                                                                                                                              "Molecular analysis of Streptococcus phase variants.";
                                                                                                                                                                                                                                                                                                                                    STRAIN=CHALLIS;
MEDLINE=96157084; PubMed=8586195;
Vickerman M.M., Sulavik M.C., Clewell D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Streptococcus
gordonii Challis.";
J. Bacteriol. 174:3577-3586(1992)
EMBL; U12643; AAC43483.1; -.
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                                                                                                                                                                                                                                                           Stand. 85:309-314(1995)
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a gene coding for an extracellular
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Best Local :
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"Sequence analysis of the gene for the gl
"Steptococcus mutans INGBRITT.";
Submitted (MAY-1990) to the EMBL/GenBank/
EMBL, M30945; AAA26894.1;
InterPro; IPR002479; CW binding.

Pfam; PF01473; CW binding.
SEQUENCE 563 AA; 62932 MW; A0BB6DAAF4
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InterPro; IPR003318; Glyco_hydro_f
Pfam; PF01473; CW binding I; 18.
Pfam; PF02324; Glyco_hydro_70; 1.
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01-NOV-1996
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276
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                                                  2 GARTINGOLLYFRANGVOVKG 22
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Search completed: Job time : 35.1564 35.1564 November 13, 2003, 09:44:01

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   Issued_Patents_AA:*
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Copyright (c) 1993 - 2003
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US-09-210-261-2
US-09-210-361-4
US-09-210-361-4
US-09-210-361-6
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US-09-31-361-6
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US-08-495-310-7
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US-08-495-310-7
US-08-495-310-7
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US-08-485-746-2
US-08-465-852A-3
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TITLE OF INVENTION: LATEXES IN PAPER MANUFACE
FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172

Sequence 2, Application U
, Patent No. 6284479
, GENERAL INFORMATION:
, APPLICANT: Nichols, Scot
, TITLE OF INVENTION: Subs
TITLE OF INVENTION: Late

Scott

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US/09210361

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Substitutes for Modified Starches and

Paper Manufacture

US-09-210-361-2 RESULT 2

Best Local Matches 2 Qy 1 Db 1300	US-09-00/-999- Sequence 2, Sequence 2, GENERAL INFO GENERAL INFO APPLICANT: TITLE OF IN TITLE OF IN TITLE OF IN TITLE OF IN TITLE APPLICATE APPLICATE APPLICATE APPLICATE APPLICATE APPLICATION NO 25 SOFTWARE: EARLIER FII SEQ ID NO 2 SEQ ID NO 2 IENGTH: 14 TYPE: PRT ORGANISM: US-09-007-999-	28 29 30 31 31 32 33 33 34 35 36 37 38 39 40 41 42 42 43 44 44 45
NG	Sequence 2, Application US/01 Sequence 2, Application US/01 Patent No. 6087559 GENERAL INFORMATION: Scott E TITLE OF INVENTION: Substitutive of INVENTION: Latexes FILE REFERENCE: 0356D CURRENT APPLICATION NUMBER: CURRENT FILING DATE: 1998-0 EARLIER FILING DATE: 1995-0 EARLIER FILING DATE: 1995-0 NUMBER OF SEQ ID NOS: 2 SOFTWARE: FASTSEQ for Windo SEQ ID NO 2 LENGTH: 1475 TYPE: PRT ORGANISM: Streptococcus mu 100-007-999-2	2 334444444444 8881111111111
imilarity 100.0%; P ; Conservative 0; TGARTINGQLLYFRANGVQVKG TGARTINGQLLYFRANGVQVKG	Sc S	.1 619 .1 619 .1 641 .1 641 .1 648 .1 648 .1 648 .1 648 .1 648 .1 648 .1 648 .1 648 .1 1648 .1 163 .1 163
red. No. 1.5e Mismatches	9007999 utes for Modified in Paper Manufaci US/09/007,999 1-16 08/478,704 6-07 ws Version 3.0 tans tans	2 US-08-247-491A-3 2 US-08-319-795-2 2 US-08-468-985-2 3 US-08-961-083-160 4 US-09-536-784-160 4 US-09-536-784-2 1 US-08-469-434-2 1 US-08-469-434-2 2 US-08-468-718-2 2 US-08-468-718-2 2 US-08-446-201-3 3 US-08-446-201-3 3 US-08-482-847-23 4 US-09-287-070-2 4 US-09-287-070-2 4 US-09-206-942-73 ALIGNMENTS
-10;	Starch and ture	Sequence 3, Appli Sequence 2, Appli Sequence 2, Appli Sequence 160, App Sequence 160, Appli Sequence 2, Appli Sequence 23, Appli Sequence 23, Appli Sequence 23, Appli Sequence 24, Appli Sequence 27, Appli Sequence 27, Appli Sequence 27, Appli Sequence 27, Appli Sequence 27, Appli

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; LENGTH: 1475
; TYPE: PRT
; ORGANISM: Streptococcus mutans
US-09-210-361-2
                                                                                                                                                                                                          RESULT 4
US-08-057-162B-3
; Sequence 3, Application US/08057162B
; Sequence 3, Sequence 3,
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US-09-740-274-2
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SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 2
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Best Local Similarity
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EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
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PRIOR
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CURRENT FILING DATE: 2000-12-19
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PRIOR APPLICATION NUMBER:
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE:
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TYPE: PRT
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CORRESPONDENCE ADDRESS:
ADDRESSEE: Hamilton, Brook,
STREET: Two Militia Drive
                                                                                                                                                     APPLICANT: Taubman, Mart APPLICANT: Smith, Daniel
                                                                                         TITLE OF INVENTION: SYNTHETIC PEPTIDE VACCINE FOR DENTAL CARIES NUMBER OF SEQUENCES: 5
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APPLICATION NUMBER: 08/
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Pred. No. 1.
                                 Smith & Reynolds, P.C
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APPLICANT: Nichols, S
TITLE OF INVENTION: S
TITLE OF INVENTION: L
                              ; TYPE: PRT; ORGANISM: streptococcus mutans
US-09-210-361-4
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Best Local
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FILING DATE: 30-APR-1993
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/877,295
APPLICATION OF MAY-1992
ATTORNEY/AGENT INFORMATION:
ANAME: DECEMATION:
ANAME: DECEMATION:
ANAME: DECEMATION:
ANAME: DECEMATION:
ANAME: DECEMATION:
                                                                                                          SEQ ID NO 4
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                                                                                                                                                                                                                                                                                                                                                                                        FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
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STATE: Massac
COUNTRY: USA
TTD: 02173
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EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER FILING DATE: 1998-01-20
                                                                                                                                                                                                                                                                                                                                                      EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
                                                                                                                                                                                                  EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
                                                                                                                          SOFTWARE: FastSEQ
                                                                                                                                            NUMBER OF SEQ ID NOS:
                                                                                                                                                                EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                EARLIER APPLICATION NUMBER: 08/482,711
                                                                                                                                                                                                                                        EARLIER APPLICATION NUMBER: 08/485,243 EARLIER FILING DATE: 1995-06-07
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
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LENGTH: 22 amino acids
TYPE: amino acid
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                                                                                    LENGTH: 1375
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRANDEDNESS:
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Substitutes for Modified Starches
Latexes in Paper Manufacture
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77.3%;
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Pred. No. 1.9e-08;
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Length 1375;
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Query Match

69.6%;

Score

78;

DB 3;

Best Local

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; ORGANISM: streptococcus mutans
US-09-740-274-4
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US-09-740-274-4
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Best Local
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SEQ ID NO 4
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                                                                                                                 SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 2
LENGTH: 1430
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PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-(
PRIOR FILING DATE: 1095-(
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PRIOR APPLICATION NUMBER: 09/
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 08/
Query Match 59.1
Best Local Similarity 59.1
Matches 13; Conservative
                                                                TYPE: PRT ORGANISM: Streptococcus mutans -09-008-172-2
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SOFTWARE: FastSEQ for Windows Version
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PRIOR FILING DATE: 1998-1
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-0
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CURRENT FILING DATE: 2000-12-19
                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/09/008,172
CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                          APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0358D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILE REFERENCE:
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                                                                                                                                                                           NUMBER OF SEQ ID NOS:
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APPLICATION NUMBER: 09/009,620
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                59.8%;
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1; Mismatches
                  Score 67; DB 3;
Pred. No. 0.0081;
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ches 6;
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     4; Indels
                                    Length 1430;
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RESULT 8
US-09-210-361-6
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                                        PRIOR APPLICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1998-01-20
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/08,172
PRIOR FILING DATE: 1998-01-16
PRIOR PRIOR PRIOR DATE: 1998-01-16
PRIOR FILING DATE: 1995-06-07
PRIOR FILING DATE: 1995-06-07
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Patent No. 6465203
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Best Local
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CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
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EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/009,620
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EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
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SOFTWARE: FastSEQ for Windows Version
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NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                       PRIOR FILING DATE: 1998-0
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-0
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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3ER: 09/210,361
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59.1%;
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; ORGANISM: streptococcus mutans US-09-740-274-6
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US-08-793-824-2
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Best Local Similarity
Thes 12; Conserve
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APPLICANT: Simpson, Cl
APPLICANT: Siffsard, Pl
APPLICANT: Jacques, N:
TITLE OF INVENTION: G
TITLE OF INVENTION: G
TITLE OF INVENTION: U
TITLE OF INVENTION: G
TITLE OF INVENTION: G
                                              RESULT 11
US-09-499-203-2
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Sequence 2, Application US/09499203
Patent No. 6570065
GENERAL INFORMATION:
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INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version
CURRENT APPLICATION NUMBER: US/08/793,824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: AU PM76:
FILING DATE: 24-AUG-1994
TELECOMMUNICATION INFORMATION:
TELEPHONE: 61 2 9957 5944
TELEPAX: 61 2 957 6288
                                                                                                                                                                                                                                                                  MOLECULE TYPE: protein ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CLASSIFICATION: 800 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
LENGTH: 1577 amino acids
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mes 13; Conserv
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STREET: Level 8, 168 Walker Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE
                                                                                                                                                                                                                                                      ORGANISM:
                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                     STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                  TYPE: amino acid
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                                                                                                              1469
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59.1%;
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Genetic Manipulation of Plants
Increase Stored Carbohydrates
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Philip Morrison
                                                                                                                                                                                        54.5%;
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Pred. No. 0.
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Pred. No. 0.014;
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APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karcla
FITTE OF INVENTION: Nucleic Acid Molecules Encoding Alternansucrase
FILE REFERENCE: 147-196P
CURRENT APPLICATION NUMBER: US/09/499,203
CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 2
LENGTH: 2057
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GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NIGHA V.
APPLICANT: FIRCA, JOSEPH R.
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US-08-480-604A-7
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Best Local Similarity
Matches 12; Conserv
           COMPUTER: ISM PC COMPATIBLE
COMPUTER: ISM PC COMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
SOPTWARE: PACENTIN Release #1.0, Version #1.
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/480,604A
FILING DATE: 07-UUN-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/422,711
FILING DATE: 14-APPL-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION NUMBER: US 07/985,321
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION NUMBER: US 07/429,791
APPLICATION NUMBER: US 07/429,791
FILING DATE: 33-OCT-1989
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 33-OCT-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    261 GLOTIDGNLOYFNOOGVOIKG 281
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                58.0%;
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Pred. No.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 7, Application US/08405496A Patent No. 5919665
GENERAL INFORMATION:
APPLICANT: WILLIAMS, JAMES A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
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TELEPAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 7:
SEQUENCE CHARACTERISTICS:
              TELEFAX: (415)
INFORMATION FOR SEQ ID NO: 7
SEQUENCE CHARACTERISTICS:
SEQUENCE Bl1 amino acids
                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION UMBER: US 08/
FILING DATE: 25-OCT-1994
PRIOR APPLICATION UMBER: US 08/
APPLICATION UMBER: US 08/
FILING DATE: 02-DEC-1993
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TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM TITLE OF INVENTION: NEUROTOXIN
                                                                                                                  REFERENCE/DOCKET NUMBER: OF TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                      PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 0.
FILING DATE: 31-0CT-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION DATA:
APPLICATION NUMBER: US
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MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDIEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME: INGOLIA, DIAN REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY: un
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: amino acid
                                                                                                                                                   NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                                                    FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ENGTH:
                                                                                 TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
STRANDEDNESS:
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TMO: 7:
unknown
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                           NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHI
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
                                                                           INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION DATA: APPLICATION NUMBER: US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
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APPLICATION NUMBER:
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PRIOR APPLICATION DATA:
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APPLICATION NUMBER:
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                                             SEQUENCE CHARACTERISTICS:
LENGTH: 811 amino acids
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US 0:
FILING DATE: 16-MAR-1995
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CLASSIFICATION:
                            TYPE: amino acid
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FRADHYE, NISHA V.
TTBCA, JOSEPH R.
TOUGLAS
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unknown
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                                                                                                                                                                                                                                                                                                                                                                    25-OCT-1994
                                                                               397-8338
TN NO: 7:
              unknown
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Pred. No. 4.
                                                                                                                                                 OPHD-01763
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RESULT 15
US-08-957-310-7
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                                                                                                                                                                                                                                                               COUNTRY: United States of America
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION NUMBER: US/08/957,310
FILING DATE: 23-OCT-1997
CLASSIFICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 24-OCT-1994
APPLICATION NUMBER: US 08/161,907
FILING DATE: 24-DEC-1993
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
FILING DATE: 04-DEC-1992
FILING DATE: 04-DEC-1992
FILING DATE: 04-DEC-1993
ATTORNEY/AGENT INFORMATION
AMME: Ingolia, Diane E
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: 09HD-01121
TELEPHONE: (415) 397-8338
INFORMATION FOR SEQ ID NO: 7:
В
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                                                                                                                                                 US-08-957-310-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 7, Application US/08957310 Patent No. 6365158 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 44.2%;
Best Local Similarity 52.2%;
Matches 12; Conservative
                                                                      Query Match 44.2%;
Best Local Similarity 52.2%;
Matches 12; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: IDENTIFICATION OF NEUTRALIZING TITLE OF INVENTION: OF TOXIN A AND TOXIN B FOR THE DISEASE DISEASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
ADDRESSEE: Medlen & Carroll
STREET: 220 Montgomery Street, Suite 2200
CITY: San Francisco
STATE: California.
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                                                                                                                                                                TOPOLOGY: unknown MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                       SEQUENCE CHARACTERISTICS:
LENGTH: 811 amino acids
                                                                                                                                                                                                      STRANDEDNESS:
                                                                                                                                                                                                                         TYPE: amino acid
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 587 TGLRTIDGKKYYFNTNTAVAVTG 609
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                                    TGARTINGQLLYFRAN-GVQVKG 22
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein
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                                                                        Pred. No. 4.2;
2; Mismatches
                                                                                             Score 49.5;
Pred. No. 4.
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                                                                                                              DB 4; Length 811;
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TREATMENT OF C. DIFFICILE
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Search completed: November 13, 2003, 09:47:58 Job time : 15.2844 secs

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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
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Maximum DB
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139.565 Million cell updates/sec
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1: /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*

2: /cgn2_6/ptodata/2/pubpaa/PCT_NEW_PUB.pep:*

3: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*

5: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*
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11 US-09-882-774-1

9 US-09-765-272-160

11 US-09-769-787-184

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11 US-09-769-787-197

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15 US-10-091-504-997

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Sequence 2, Appli
Sequence 4, Appli
Sequence 6, Appli
Sequence 7, Appli
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Sequence 1796, A
Sequence 160, Appli
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US-09-298-523B-58	56-019-2	9-829-382-2	-298-523B	09-765-272-38	S-10-177-293-34	-10-128-714-839	-10-128-714-3	70-34	-10-243-977-	Ļ	0-011-366-	-10-366-686-	-10-294-56	US-10-156-761-11375	-09-738-626-	9-738-626-436	-10-301-997-87	-10-301-997-4	5-567A-8	9-826-509-4	-10-029-386-33	9-298-523E	0-156-761-109	-761-1429	0-092-880-4	0-193-764-6	-10-193-764-6	-10-274-694-	
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ALIGNMENTS

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PRIOR FILING DATE: 1998-01.
PRIOR APPLICATION NUMBER: (
PRIOR FILING DATE: 1995-06;
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FASESEQ for Winds
SEQ ID NO 2
LENGTH: 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT PILLING DATE: US/09/740,274
CURRENT FILLING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR APPLICATION NUMBER: 09/478,704
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR FILING DATE: 1998-01-20
PRIOR FILING DATE: 1998-01-09
PRIOR FILING DATE: 1995-06-07
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Patent No. US20020031826A1
GENERAL INFORMATION:
                                                                    Query Match
Best Local Similarity
Matches 22; Conserv
                                                                                                                                                                             ORGANISM: Streptococcus mutans -09-740-274-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Nichols,
TITLE OF INVENTION:
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                                                                                                                                                                                                                             TYPE: PRT
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FILING DATE: 1998-01-16
TGARTINGQLLYFRANGVQVKG
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                                                                         100.0%; Score 112; DB 9; ilarity 100.0%; Pred. No. 3.5e-10; Conservative 0; Mismatches 0;
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                                                                                                                                                                                                                                                                                                  Windows Version
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) ORGANISM: streptococcus mutans US-09-740-274-4
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CURRENT APPLICATION NUMBER: US/99/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR PPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1998-01-20
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 09/008,620
PRIOR APPLICATION NUMBER: 09/008,721
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 1998-01-16
PRIOR REPLICATION NUMBER: 09/008,172
PRIOR FILING DATE: 1998-01-16
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SEQ ID NO 4
LENGTH: 1375
TYPE: PRT
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Best Local (
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PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-0
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PRIOR FILING DATE: 1998-0
PRIOR FILING DATE: 1998-0
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR APPLICATION NUMBER: 09/007,999
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
                                                                PRIOR FILING DATE: 1
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
                                                                                                              PRIOR APPLICATION NUMBER:
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FILING DATE: 1998-01-20
APPLICATION NUMBER: 08/4
FILING DATE: 1998-00
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Pred. No.
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Publication No. US20030054493A1
GENERAL INFORMATION:
APPLICANT: Williams, James A.
Matches
                  Query Match
Best Local
                                                                                                                                                                                                                                       INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US/08/957,310
FILING DATE: 23-OCT-1997
APPLICATION NUMBER: US 08/329,154
FILING DATE: 24-OCT-1994
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1993
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1993
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/011,366
FILING DATE: 16-No. US20030054493A1-2001
CLASSIFICATION: <Unknown>
PRIOR APPLICATION DATA:
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
ADDRESSE: Medlen & Carroll
STREET: 220 Montgomery Street, Suite 2200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kink, John A.
TITLE OF INVENTION: IDENTIFICATION OF NEUTRALIZING EPITOPES
OF TOXIN A AND TOXIN B FOR THE TREATMENT OF C. DIFFICILE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1332 TGSQTIAGKKLYFASDGKQVKG 1353
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MEDIUM TYPE: Floopy disk
COMPUTER: IBM PC compatible
COMPUTER: THM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                               NAME: Ingolia, Diane E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OF:
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES:
                                                                                             TOPOLOGY: unknown
MOLECULE TYPE: protein
SEQUENCE DESCRIPTION: SEQ ID NO:
                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
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                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CITY: San Francisco
                                                                                                                                                                                                                                                           TELEPHONE: (41 TELEPAX: (415)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: PatentIn Release #1.0,
                                                                                                                                                                          LENGTH: 811 amino acids TYPE: amino acid
                                                                                                                                                            STRANDEDNESS: unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
44.2%;
ilarity 52.2%;
Conservative
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                                                                                                                                                                                                                                                                            (415)
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                                                                                                                                                                                                                                                             397-8338
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Pred. No.
Pred. No. 9;
2; Mismatches
                                                                                                                                                                                                                                                                                                                        OPHD-01121
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                                           DB 15;
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                                           Length 811;
          Indels
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1 TGARTINGQLLYFRAN-GVQVKG 22

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TYPE: PRT
CORGANIEM: Clostridium difficile
US-10-222-038-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-011-366-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 2, Application US/10222038 Publication No. US20030129198A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 6, Application US/10011366
Publication No. US20030054493A1
GENERAL INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: US 60/128,686
PRIOR FILING DATE: 1999-04-09
PRIOR APPLICATION NUMBER: US 60/186,201
PRIOR FILING DATE: 2000-03-01
PRIOR APPLICATION NUMBER: US 60/190,111
PRIOR APPLICATION NUMBER: US 60/190,111
PRIOR FILING DATE: 2000-03-20
NUMBER OF SEQ ID NOS: 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Phelps, Carol
TITLE OF INVENTION: METHODS TO PRODUCE HIGH LEVELS OF C. DIFFICILE TOXING
FILE REFERENCE: 42052-20002.10
CURRENT APPLICATION NUMBER: US/10/222,038
CURRENT FILING DATE: 2002-08-15
PRIOR APPLICATION NUMBER: US 09/545,773
PRIOR FILING DATE: 2000-04-10
PRIOR FILING DATE: 2000-04-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: TechLabs, Inc.
APPLICANT: Wilkins, Tracy
APPLICANT: Lyerly, David
APPLICANT: Monorief, Scott
APPLICANT: Zheng, Limin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
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                                                                                                                         COMPUTER READABLE FORM:

MEDIIM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: 9C-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/08/957,310
FILING DATE: 23-OCT-1997
                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: IDENTIFICATION OF NEUTRALIZING EPITOPES
OF TOXIN A AND TOXIN B FOR THE TREATMENT OF C. DIFFICILE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Williams, James A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   587 TGLRTIDGKKYYFNTNTAVAVTG 609
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 TGARTINGQLLYFRAN-GVQVKG 22
                                                             APPLICATION NUMBER: US/10/011,366
FILING DATE: 16-No. US20030054493A1-2001
CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                           STATE: California
                                                                                                                                                                                                                                                                                                                                  CITY: San Francisco
                                                                                                                                                                                                                                                                                                                                                    STREET: 220 Montgomery Street, Suite 2200
                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE: Medlen & Carroll
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                    94104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kink,
                                                                                                                                                                                                                                                                                    United States of America
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              44.2%; Score 49.5; Di
52.2%; Pred. No. 9.8;
tive 2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              John A.
                                                                                                                                                                                                                                                                                                                                                                                                                                              DISEASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 16;
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US-10-156-761-13796
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Publication No. US20030115634A1
GENERAL INFORMATION:
APPLICANT: JOMAA, Hassan
TITLE OF INVENTION: GENES OF THE 1-DESOXY-D-XYLULOSE BIOSYNTHESIS PATH
FILE REFERENCE: JOMAA-12 (PCT)
CURRENT APPLICATION NUMBER: US/10/275,360
CURRENT FILING DATE: 2002-11-05
PRIOR APPLICATION NUMBER: PCT/EP01/04537
PRIOR APPLICATION NUMBER: DE10021688.9
PRIOR FILING DATE: 2000-05-05
PRIOR FILING DATE: 2000-05-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 28
SOFTWARE: PatentIn version 3.1
SEQ ID NO 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 52.2
Matches 12; Conservative
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                                                                      GENERAL INFORMATION:
APPLICANT: OMURA, S
                                                                                                                  Sequence 13796, Application US/10156761 Publication No. US20030119018A1
                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT ORGANISM: Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          INFORMATION FOR SEQ ID NO: 6:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH: 343
                                                                                                                                                                                                                                                                                                                                  Local Similarity 56.2%; Pred. No. 3.9; es 9; Conservative 3. Minimum.
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REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01121
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 04-DEC-1992
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-0CT-1989
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TOPOLOGY: linear MOLECULE TYPE: protein SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE CHARACTERISTICS:
LENGTH: 2710 amino acids
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                                                                                                                                                                                                                                                       138
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FILING DATE: 24-0CT-1994
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGARTINGQLLYFRAN-GVQVKG 22
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                                                                                                                                                                                                                                                       ITDQLLYFQSKGVDIK 153
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           ISHIKAWA, JUN
HORIKAWA, HIROSHI
                                                      IKEDA, HARUO
                                                                                , SATOSHI
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Pred. No. 38;
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Length 2710;

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FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER: JP 2001-08-02
NUMBER: JP 2001-08-02
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US-09-882-774-1
                                                                                                                                                                                                                                                                                                                                                                                      ; TYPE: PRT; ORGANISM: Streptococcus pneumoniae US-09-882-774-1
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Best Local Similarity
Watches 9; Conserva
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Best Local
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SEQ ID NO 13796
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                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: US 60/211,892
PRIOR FILING DATE: 2000-06-14
PRIOR APPLICATION NUMBER: US 60/213,387
PRIOR FILING DATE: 2000-06-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/09/882,774
CURRENT FILING DATE: 2001-06-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Hodges, Robert
TITLE OF INVENTION: Use of Coiled-Coil Structural Scaffold to Generate
TITLE OF INVENTION: Structure-Specific Peptides
FILE REFERENCE: 003592-007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Houston, Michael E. APPLICANT: Hodges, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQ ID NOS: 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ENGTH: 120
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                                                                                                                                                                                                                                                       462
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9; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SHIBA,
SAKAKI
                                                                                                                                                                                                                                                       TGWAKVNGSWYYLNANGAMATG 483
STREET: 9410 Key West Avenue
CITY: Rockville
STATE: Maryland
                                                                                                                                                                                                                                                                                                                          Conservative
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                                                                                                                                                                                                                                                                                                                                      41.18;
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    Mismatches

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Pred. No.
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Pred. No. 1.7;
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TOPOLOGY: linear

HOLECULE TYPE: protein
SEQUENCE DESCRIPTION: SEQ ID NO: 160:
US-09-765-272-160
                                                                                                                                                                    NUMBER OF SEQ ID NOS: 388
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 184
LENGTH: 744
TYPE: PRT
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US-09-769-787-184
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                                                                                                                                           ORGANISM: Streptococcus pneumoniae US-09-769-787-184
                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
APPLICANT: Microbial Technics Limited
APPLICANT: Gilbert, Christophe FG
APPLICANT: Hansbro, Philip M
TITLE OF INVENTION: Proteins
FILE REFERENCE: PMC/P21129WO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 184, Application US/09769787 Publication No. US20030091577A1
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Best Local Similarity
                                                                      Matches
                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/09/769,787
CURRENT FILING DATE: 2001-01-26
PRIOR APPLICATION NUMBER: GB 9816337.1
PRIOR FILING DATE: 1998-03-27
PRIOR APPLICATION NUMBER: US 60/125164
PRIOR FILING DATE: 1999-03-19
PRIOR FILING DATE: 1999-03-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (301) 309-8512 INFORMATION FOR SEQ ID NO: 160:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: 08/961,083
FILING DATE: <Unknown>
ATTORNEY AGENT INFORMATION:
NAME: Brookes, A. Anders
REGISTRATION NUMBER: 36,373
REFERENCE/DOCKET NUMBER: PB3401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: HP Vectra 486/33
operating system: MSDOS version 6.2
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/765,272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CLASSIFICATION: <Unknown> PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ZIP: 20850
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELECOMMUNICATION INFORMATION
TELEPHONE: (301) 309-850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        544 TGWAKVNGSWYYLNANGAMATG 565
 647 TGWAKVNGSWYYLNANGAMATG 668
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                                                                                        41.1%; Score 46; DB 11; 40.9%; Pred. No. 33;
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RESULT 12
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US-10-091-504-970
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CURRENT FILING DATE: 2001-01-17
Prior application data removed - refer to
NUMBER OF SEQ ID NOS: 2442
SOFTWARE: PATENTIN VEY: 2.0
SEQ ID NO 970
LENGTH: 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids,
FILE REFERENCE: PC007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 970, Application US/09764869 Patent No. US20020061521A1
                               Sequence 970, Application US/10091504 Publication No. US20030059908A1 GENERAL INFORMATION:
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NAME/KEY: SITE
LOCATION: (1)
OTHER INFORMATION: 1
NAME/KEY: SITE
                                                                                                                                                         Matches
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          APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids,
FILE REFERENCE: PC007C1
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OTHER INFORMATION:
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OTHER INFORMATION:
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LOCATION: (59)
OTHER INFORMATION: Xaa
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RESULT 14
US-09-738-626-4344
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CURRENT FILING DATE: 2002-03-07
NUMBER OF SEQ ID NOS: 2442
Prior Application removed - See File Wrap;
SOFTWARE: Patentin Ver. 2.0
SEQ ID NO 970
                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                             Sequence 4344, Application US/09738626 Publication No. US20020197605A1
                                                                                                                                    GENERAL INFORMATION:
                                                                                                         APPLICANT: NAKAGAWA, SATOSHI APPLICANT: MIZOGUCHI, HIROS
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ORGANISM: Homo sapiens
FEATURE:
TITLE
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OTHER INFORMATION: Xaa
NAME/KEY: misc_feature
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OTHER INFORMATION: Xaa
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OTHER INFORMATION: Xaa
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OTHER INFORMATION: Xaa
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NAME/KEY: misc_feature
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NAME/KEY: misc_feature
LOCATION: (28)
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OTHER INFORMATION: Xaa
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FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR FILING DATE: 1999-12-16
PRIOR APPLICATION NUMBER: JP 00/159162
PRIOR FILING DATE: 2000-04-07
PRIOR APPLICATION NUMBER: JP 00/280988
PRIOR FILING DATE: 2000-08-03
NUMBER: OF SEQ ID NOS: 7059
SOFTWARE: Patentin ver. 3.0
SEQ ID NO 4344
LENGTH: 196
TYPE: PRT
ORGANISM: Corynebacterium glutamicum
US-09-738-626-4344

78.8*: Score 43.5
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APPLICANT: Gosink, Khossheh

APPLICANT: Massure, Robert

ITTLE OF INVENTION: IDENTIFICATION AND CHARACTERIZATION OF NOVEL

ITTLE OF INVENTION: DESINOCOCCAL CHOLINE BINDING PROTERINS CbpG, AND

ITTLE OF INVENTION: DIAGNOSTIC AND THERAPEUTIC USES THEREOF

FILE REPERBUCE: 1340-1-024cip

CURRENT APPLICATION NUMBER: US/09/287,070A

CURRENT FILING DATE: 1999-04-06

EARLIER APPLICATION NUMBER: 09/196,389

EARLIER APPLICATION SUMMER: 09/196,389

EARLIER APPLICATION NUMBER: 09/196,389

EARLIER PILING DATE: 1998-11-19

NUMBER OF SEQ ID NOS: 14

SOFTWARE: Patentin Ver. 2.0

SEQ ID NO 2

LENGTH: 153
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US-09-287-070-2
                                                                                                                                                                                                                                                                                                        ; FEATURE:
; NAME/KEY: UNSURE
; LOCATION: (35)
; OTHER INFORMATION: The amino acid can be any of Ile, Thr, Asn, or
; OTHER INFORMATION: Ser. The DNA coding is AST for this amino acid
; OTHER INFORMATION: Ser. The DNA coding is AST for this amino acid
US-09-287-070-2
Search completed: November 13, 2003, 10:29:01 Job time : 29.7773 secs
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 38.8%; Score 43.5; Best Local Similarity 54.5%; Pred. No. 18; Matches 12; Conservative 2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                              Query Match
Best Local S
                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
ORGANISM: Pneumococcus
                                                                                                                                                                                                      Watch 38.4%; Score 43; DB 9; Length 153; Local Similarity 36.4%; Pred. No. 16; ndels 8; Conservative 4; Mismatches 10; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 169 TGA-TISASANVLRAAGVOVRG 189
                                                                                                    114 TDWOKVNGKWYYLNSNGAMVTG 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 TGARTINGQLLYFRANGVQVKG 22
                                                                                                                                                    1 TGARTINGQLLYFRANGVQVKG 22
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 10; Length 196;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7;
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Maximum
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence:
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Perfect score:
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                                                                                                                                                                            No
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     B
B
G
                                                                                                                                                                            Score
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length: 2000000000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-290-049A-10
119
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Match
                                                                                                                                                                                                                                                                                                                                      1107863 seqs, 158726573 residues
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Listing first 45 8
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:*/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1982.DAT:*/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
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/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1985.DAT:*
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 19Jun03:*
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 AAU79285
AAU98027
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                                                                                                                                                                                                                                                                  by chance to have a
he result being printed,
distribution.
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 Streptococcus n
S. mutans gluco
                                                                                                                                                                                Description
mutans glucosyl
                                                                                                                                               muta
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T. niveum GAFUH.	AAR65965	15	338		47	45
Arabidopsis Chaila	9	21	195		47	44
Arabidopsis andeny	AAY67414	21	534		47.5	43
()	ABB98573	23	855		48	42
Human polypeptide	ω	22	401	40.8	48.5	41
Lactobacilius reut	AAU74519	23	1781		49	40
Δı	AAU38411	22	302		49	<u>د</u> 9
cchara	ABB98648	23	12	41.2	49	ب 8
Dextrane saccharas	ABB98578	23	12		49	37
Propionibacterium	AAU62860	22	4	42.0	50	ა 6
Arabidopsis thalla	AAG09844	21	ω	•	50	u G
Arabidopsis thalia	AAG09845	21	305		50	34
cracel	AAB36552	22	m	42.9	51	ω ω
-sacchara	ABB98646	23	12	•	53	32
Dextrane-saccharas	ABB98644	23	12	•	53	31
Dextrane-saccharas	ABB98643	23	12	•	59	30
L. mesenteroides a	AAB10667	21	2057	•	60	29
xtrane-sacchara	ABB98642	23	12		60	28
Alpha-D-glucosyltr	AAR91047	17	1577		63	27
Dextrane-saccharas	ABB98641	23	12	•	99	26
Dextran saccharase	ABB98574	23	2835	58.0	69	25
Leuconostoc mesent	AAU80055	23	1527	•	71	24
S. mutans grucosyr	AAU98045	23	1430		75	23
S. mutans glucosyl	AAU98044	23	1430		75	22
S. mutans glucosyl	AAU98043	23	1430		75	21
s. mutans glucosyl	AAU98042	23	1430	63.0	75	0
S. mutans glucosyl	AAU98041	23	1430		75	19
S. mutans giucosyi	802	23	1430		75	μ Β
Glucosyltransterea	AAR32925	14	1592		108	17
Streptococcus muta	AAU79288	23	1375		110	16
. mutans giu	AAU98028	23	1375	•	110	15
\sim	AAU79284	23	1476	00	119	
	AAU98040	23	1475	00.	119	13
S. mutans glucosyl	AAU98039	23	47	٥.	119	
. mutans	08	23	1475	00	119	11
. mutans glu	AAU98037	23	1475	00.	119	10

ALIGNMENTS

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RESULT 1
AAU79285
Antibody; dental caries; water insoluble glucan synthetase; anti-caries; glucosyl transferase-B; immunotherapy.
                                                                                                                                                                                                                                                          Streptococcus mutans monoclonal antibody-related protein #2
                                                                                                                                                                                                                                                                                                                              AAU79285 standard; Protein; 1017 AA.
                                                                                                                                                                                JP2002114709-A.
                                                                                                                                                                                                     Streptococcus mutans.
                                                                                                                                                                                                                                                                                                       AAU79285;
                  Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
                                                                                                            04-OCT-2000; 2000JP-0304889.
                                                                                                                                    04-OCT-2000; 2000JP-0304889.
                                                                                                                                                          16-APR-2002.
                                                                                                                                                                                                                                                                                  13-AUG-2002 (first entry)
                                                                 WPI; 2002-448101/48.
                                                                                       (UYNI-) UNIV NIPPON.
                                  an
of glucosyl
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Claim 4; Page 17-19; 28pp; Japanese

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RESULT 2
AAU98027
ID AAU9
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Best Local S
Matches 21
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                                                                                                                                                                                                                                                                                                                                            07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The invention relates to a monoclonal antibody against dental caries and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S. mutans glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU98027;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAU98027 standard;
                    The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D5571K, D567T/D571K, D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and N471D/T589E. Also included are a glucan produced by the GTF mutant,
                                                                                                                                                                 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                     19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      amyloplast;
                                                                                                                                          Disclosure; Page
                                                                                                                                                                                                                               N-PSDB;
                                                                                                                                                                                                                                                                                                      (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 447
                                                                                                                                                                                                                             2002-414332/44.
DB; ABK52938.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           represents a Streptococcus mutans monoclonal antibody-related
                                                                                                                                                                                                                                                                          SH
                                                                                                                                                                                                                                                                                                      NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                     2000US-0740274.
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95US-0478704.
95US-0482711.
95US-0485243.
                                                                                                                                                                                                                                                                                                                                  98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                         21-25; 44pp; English
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     glucan; starch; latex;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         manufacture.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0,
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Pred. No. 3.5e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTFB
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
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cc polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, cc an expression cassette comprising the expression cassette, a vector comprising the expression cassette, host cell cointroduced with the vector, a transgenic plant comprising the coating composition, a peace or tuber from the transgenic plant, a paper sizing and/or vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating a glucan is produced in the amyloplast and/or vacuole or a maize line codicient in starch biosynthesis, transformed with a gene encoding a glucan in a plant. The method comprises transforming a glucan in a plant transforming a glucan in a plant cell under plant growing plant cell with the vector, growing the plant cell under plant growing complynucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transforme from regenerated plant, where the vector contains a transforme from complyll hab binding protein to produce the glucan in the close biphosphate carboxylase small subunit, waxy, brittle-1 and complyll hab binding protein to produce the vacuole of sugar beet. Comply in the plant and additions to modified starch comply in the glucan produce and additions to modified starch comply in the plant growing the plant, which comply the produced input materials, is more cost-effective and comply comply the glucan produced by GTF, which utilises comply composition and impart gloss to the paper during coating step.

The present sequence represents GTFB.
 RESULT 3
AAU98030
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Best Local
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11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                              Glucosyltransferase; coating composition;
                                                                                                                                                                                                                                                                                                 amyloplast;
                                                                                                                                                                                                                                                                                                                                                              S. mutans
                                                                                                                                                                                                                                                                                                                                                                                             27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                            AAU98030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAU98030 standard; Protein; 1475
                                                                                                                                                                                                                                                   Synthetic.
                                                                                                                                                                                                                                                                    Streptococcus
                                                                                                                                                           US2002031826-A1.
                                                                                                                                                                                                          Misc-difference
                                                                                              19-DEC-2000;
                                                                                                                            14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ANDHLSILEAWSDNDTPYLHD
                                                                                                                                                                                                                                                                                                                                                              glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                    vacuole;
                                                                                                2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                    mutans.
   98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AA;
                                                                                                                                                                                                          448
                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                          /note= "Wild-type Ile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%;
                                                                                                                                                                                                                                                                                                   paper manufacture;
                                                                                                                                                                                                                                                                                                                     glucan; starch;
                                                                                                                                                                                                                                                                                                                                  GTFB; transgenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 119; DB 23;
Pred. No. 5.4e-09;
Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                 GTFB mutant I448V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           501
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                   plant; paper sizing;
latex; thermoplastic
                                                                                                                                                                                             substituted by Val"
                                                                                                                                                                                                                                                                                                        mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                           molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
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CC 15577/1571K/10147, 1448//45/M/105/M/105/M/17/10/M/171A, and K779Q or a GTE D polypeptide having CC vianges at positions from T589D, T589E, N471D/T589D, and CR N471D/T589E. Also included are a glucan produced by the GTF mutant, CC an isolated polymucleotide which encodes Pl or P2, or its complementary CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polymucleotide operably linked to a CC promoter, a vector comprising the polymucleotide operably linked to a CC promoter, a seed or tuber from the transgenic plant, a paper sizing and/or vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, with a gene encoding the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vector, a maize line comprising the glucan produced and transformed with a gene encoding a glucan is produced in the amyloplast and/or vector is useful CC comprising the glucan (paper sizing/coating agent). The vector is useful CC comprising the plucan (paper sizing/coating agent). The vector is useful CC conditions to produce a regenerated plant and inducing expression of the polymucleotide for a time siffcient to produce a transforming a conditions to produced in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch cc is produced in the amyloplast of potato or the vacuole of sugar beet. CC groperties and impart gloss to the paper during coating step.

CC manifacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and comprise starch by the indexer using the GTFB mutant of the invention.

CC manifacture utilising the glucan produced by GTF, which utilises biologically protein for the invention.
                                                                                    RESULT 4
AAU98031
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XSXE
                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                            Sequence
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27-AUG-2002
                                  AAU98031;
                                                                       AAU98031 standard;
                                                                                                                                                                                                                                                        ·Local Similarity
                                                                                                                                                                 481
                                                                                                                                                                                                  μ
                                                                                                                                                                                                ANDHISILEAWSDNDTPYLHD 21
                                                                                                                                                               ANDHLSILEAWSDNDTPYLHD 501
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                                                                                                                                                                                                                                                                                                              1475
                                                                                                                                                                                                                                       Conservative
(first entry)
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98US-0009620.
                                                                                                                                                                                                                                                                                                              AA
                                                                       Protein; 1475 AA
                                                                                                                                                                                                                                                        100.0%;
                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                        Score 119; DB 23;
Pred. No. 5.4e-09;
                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                             DB 23;
                                                                                                                                                                                                                                                                           Length 1475;
                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                           Gaps
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glucosyltransferase; GTPB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S. mutans glucosyltransferase GTFB mutant D457N
                                                                                                                                                                                                                                                              Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                   07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                          11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                 19-DEC-2000;
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                                                                                                                                                                                                                                                                                                                         (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                  2000US-0740274
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95US-0478704.
95US-0482711.
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98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                            /note= "Wild-type Asp substituted by Asn"
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Claim 36; Page -; 44pp; English.

Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and M471D/T589E. Also included are a glucan produced by the GTF mutant, and isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line and the interpretation of the complexity of the combination of the complexity of the combination of the combi regenerated plant, where the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucosyltransferase B or D enzyme, wild-type or mutant and a paper comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing the plant cell with the vector, growing the plant and inducing expression of the polynacient to produce a regenerated plant and inducing expression of the polynacient of the transfer sequence from The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T,

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RESULT 5
AAU9802 5
AAU9802 5
AU AAU9
XX AAU9
XX AAU9
XXX Gluc
XX Gluc
XX Gluc
XX Gluc
XX Gluc
XX Coat

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Synthetic
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, X1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K/K1014T, 1448V/D457N/D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, D769A/X170A/X171A, and K779Q or a GTF D Dolypeptide having Changes at positions from T589D, T589E, N471D, M471D/T589D, and N471D/T589E. Also included are a glucan produced by the GTF mutant, N471D/T599E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus mutans
                                                                                                                                                                                                                                                                                              Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11-DEC-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2002-414332/44
                                                                                                                                                                                                                                                 Claim 36; Page -; 44pp; English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              glucosyltransferase GTFB mutant D567T.
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95US-0482711.
95US-0485243.
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Pred. No. 5.4e-09;
; Mismatches 0;
  b, N471D/T589D, and ced by the GTF mutant, r P2, or its command
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
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                         complementary
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cc promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed comprising the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating agent). The vector is useful comprising a glucan in a plant. The method comprises transforming a glucan in a plant. The method comprises transforming a comprising a glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and composition of the polynucleotide for a time sufficient to produce the glucan in the require input materials to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Claucans are useful as substitutes for and additions to modified starch claucans are useful as substitutes for and additions to modified starch composically produced input materials, is more cost-reflective and compromentally friendly. Moreover, glucans also exhibit thermoplastic composically produced input materials, is more cost-effective and composically produced input materials, is more cost-effective and composically produced in put materials, is more cost-effective and composition in claim 36.

CC was created by the indexer using the GTFB mutant of the invention. CC was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
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AAU98033
ID AAU9
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   Best Loc
Matches
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11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                               Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                S. mutans glucosyltransferase
                                                                                                                                                                                                                                                                         Streptococcus
                                                                                                                                                                                                                                                                                                          amyloplast;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAU98033;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU98033 standard;
                                                                                                                                                                                                                                                      Synthetic.
                                                                                                           14-MAR-2002
                                                                                                                                                 US2002031826-A1
                                                                                                                                                                                                  Misc-difference
                                                                          19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       lynucleotide, a ribonucleic acid sequence encoding the GTF mutant, expression cassette comprising the polynucleotide operably linked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; ilarity 100.0%; Conservative
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                                                                            2000US-0740274
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     98US-0210361.
95US-0478704.
95US-0482711.
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/note=
                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                        entry)
                                                                                                                                                                                                                                                                                                             glucan; starch; lat
paper manufacture;
                                                                                                                                                                                     "Wild-type Lys
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 119; DB 23;
Pred. No. 5.4e-09;
                                                                                                                                                                                                                                                                                                                                                                                        GTFB mutant K1014T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           501
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                                                                                                                                                                                     gubstituted
                                                                                                                                                                                                                                                                                                                 mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 1475;
                                                                                                                                                                                           λq
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0;

27-AUG-2002 (first entry

mutans glucosyltransferase GTFB mutant D457N/D567T

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C(GTF) B polypeptide having changes at position from 1448V, D457N, C(BF7)D571K/K1014T, 1448V/D457N/D57T/D571K/K7014T, 1448V/D457N/D57T/D571K/K709AY17DA, and K779Q or a GTF D polypeptide having changes at positions from T89Dp 7189E, M47D, N47D/T89DF, and K779Q or a GTF D polypeptide having changes at positions from T89Dp 7189E, M47D, N47D/T89DF, and C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced by the GTF mutant, C(M47D/T89DF, Also included are a glucan produced in a paper string and/or vector, a seed or tuber from the transgenic plant comprising the cell continuous composition comprising a glucan produced in a plant transformed comprising the glucan is produced in the amyloplast and/or vacuole or a maize line cell furth a gene encoding a line of the glucan is produced in the amyloplast and/or vacuole or a maize line cell furth the vector, growing the plant gene encoding a glucapitant of producing a glucan in a plant. The method comprises transforming a glucapitant of producing a glucan in a plant and inducing expression of the comprising the glucan produced the plant growing to plant and inducing expression of the comprising the glucan produced the plant growing to plant and inducing expression of the comprisions to produce a regenerated plant and inducing expression of the comprisions to produced a substitute for a the available of the vacuole of sugar beet.

C(C) conditions to produced as substitutes for and additions to modified starch dispart gloss to the paper during cost-figuration but comprise the glucan produced by GTF, which
AAU98034
ID AAU9
XX
AC AAU9
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                                                                      RESULT 7
                                                                                                                                                                                                       Matches
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Best Local
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16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nichols SE;
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                                     AAU98034 standard;
                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            36; Page -; 44pp; English.
                                                                                                                                481
                                                                                                                                                                 بر
                                                                                                                                                                                                         21;
                                                                                                                                                                                                                          Similarity
                                                                                                                                                                     ANDHLSILEAWSDNDTPYLHD 21
                                                                                                                                ANDHISILEAWSDNDTPYLHD 501
                                                                                                                                                                                                                                                                                 1475
                                                                                                                                                                                                         Conservative
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98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                 AA
                                     Protein; 1475
                                                                                                                                                                                                                          100.0%;
                                                                                                                                                                                                          0;
                                                                                                                                                                                                          Score 119; DB 23;
Pred. No. 5.4e-09;
; Mismatches 0;
                                                                                                                                                                                                                                                Length 1475;
                                                                                                                                                                                                            Indels
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(GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, 1448V/D457N/D567T/D571K, D567T/D571K, CC P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CC changes at positions from T589D, T589E, N471D, N471D/T589D, and K779Q or a five complementary CC changes at positions from T69D, T589E, N471D, N471D/T589D, and CC changes at positions from T69D, T589E, N471D, N471D/T589D, and x779Q or a flow complementary CC polynucleotide, a ribonucleoic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the expression cassette, host cell CC introduced with the vector, a transgenic plant comprising the produced in a plant transformed CC coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, cc the glucan is produced in the amyloplast and/or vacuole or a maize line CC comprising the placan (paper sizing/coating agent). The vector is useful CC comprising the plant plant wild type or mutant and a paper CC comprising the glucan in a plant. The method comprises transforming a glucan in a plant. The method comprises transforming a glucan in a plant wild type or mutant and a paper CC conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the cc conditions to produce a regenerated plant, where the vector contains a transfer lead of the conditions by protein to produce a transgenic plant, and glucan in the conditions by phosphate carboxylase small subunit, waxy, brittle-1 and conspirated in the amyloplast of potato or the vacuole of sugar beet. CC Glucans are useful as substitutes for and additions to modified starch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11-DEC-1998;
07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (NICH/)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            vacuole;
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98US-0008172
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95US-0482711
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "Wild-type Asp substituted by Thr'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   note= "Wild-type Asp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      glucosyltransferase from I448V, D457N,
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RESULT 8
AAU98035
ID AAU98035
ID AAU98035
AX AAU8035
XX AAU80
XX Gluc
KW Gluc
KW Coat
KW Coat
XX Synt
XX Synt
XX I S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                      16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-AUG-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14-MAR-2002
                                                                                                                                                             Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19-DEC-2000;
                                                                                                                                                                                                                                              WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                    (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-JUN-1995;
                                                                              Claim 36; Page -; 44pp; English.
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                                                                                                                                         manufacture,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
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                                                                                                                                                                                                                                                                                                                                                      NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mutans
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      note= "Wild-type Asp substituted by
                                                                                                                                                                                                                                                                                                                                                         Ħ
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                                                                                                                                         comprises
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Pred. No. 5
                                                                                                                                               mutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTFB mutant D457N/D571K
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
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                                                                                                                                            specific
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The invention an

isolated protein comprising a ide having changes at position

glucosyltransferase from 1448V, D457N,

US2002031826-A1

(GTF) B polypeptide

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CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC P169A/Y170A/T, I448V/D457N/D567T/D571K/T79Q/K1014T, CC Y169A/Y170A/T71A, and K779Q or a GTP D polypeptide having CC (hanges at positions from T589D, T589E, N471D, N471D/T589D, and CC (hanges at positions from T589D, T589E, N471D, N471D/T589D, and CC (hanges at positions from T589D, T589E, N471D, N471D/T589D, and CC (hanges at positions from T589D, T589E, N471D, N471D/T589D, and CC (hanges at positions included are a glucan produced by the GTP mutant, CC (hanges at polymuclectide which encodes P1 or P2, or its complementary CC (hanges at polymuclectide which encodes P1 or P2, or its complementary CC (hanges at polymuclectide operably linked to a CC (hanges at polymuclectide operably linked to a CC (hanges at passes at polymuclectide operably linked to a CC (hanges at passes at
RESULT 9
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Matches
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                                                                                                                                                                                                                                                                    S. mutans glucosyltransferase GTFB mutant D567T/D571K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                             Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                              27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                 AAU98036;
                                                                                                                                                                                                                                                                                                                                                                                     AAU98036
                                                                                                                                                                  Streptococcus
                                                     Misc-difference
                                                                                                                                             Synthetic.
                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ANDHLSILEAWSDNDTPYLHD 21
                                                                                                                                                                                                                                                                                                                                                                                     standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ANDHLSILEAWSDNDTPYLHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1475 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                  mutans
                                                           571
                                                                                          Location/Qualifiers 567
                                        /note=
                                                                      note= "Wild-type Asp substituted
                                                                                                                                                                                                                                                                                                                                                                                         Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100.0%;
                                          "Wild-type Asp
                                                                                                                                                                                                                                                                                                                                                                                         1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 119; DB 23;
Pred. No. 5.4e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                          substituted by Lys"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
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0;

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481 ANDHLSILEAWSDNDTPYLHD 501

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Query Match
Best Local S
Matches 21
                            21;
ANDHLSILEAWSDNDTPYLHD
                            Conservative
                            0;
                             Mismatches
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Sequence

Similarity

100.0%;

Score 119; DB 23; Pred. No. 5.4e-09;

23; 0

Length 1475; Indels

o •-

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CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D57TK, D457N/D57TK, D567T/D57TK, M1014T, D457N/D57TK, D567T/D57TK, CC D567T/D57TK, M1014T, A48V/D457T, D457N/D57TK, D567T/D57TK, CC D567T/D57TK, M1014T, A48V/D457TA, D567T/D57TK, CC D567T/D57TK, M1014T, A M1014TA, A M1014T, A M1014TA, A M1014
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 36; Page -; 44pp; English.
                                        properties and impart gloss to the paper during coating step. The present sequence represents a GTPB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as land the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               manufacture,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               comprises mutations in specific positions
                                                                       appearing as AAU98027
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RESULT 10
RADU98037
ID RADU98037
ID AAU98037
ID AAU98037
ID AAU98037
AAU980
XX AAU98
DT 27-At
XXX Glucc
KW Glucc
KW Coatit
XXX Strep
OS Synti
XXX WS20
PT Misc.
FT Glucle
FT Daps
FT Glucle
FT Glucle
FT Daps
FT Glucle
FT Daps
FT Glucle
FT Glu
The invention an isolated protein comprising a glucosyltransferase CC (GTF) B polypeptide having changes at position from I448V, D457N, D567T, M457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, I448V/M257N/D571K, D567T/D571K/K1014T, GC D567T/D571K/K1014T, I448V/M257N/D571KX, D567T/D571K/K1014T, GC D567T/D571K/K1014T, I448V/M257N/D657T/D571K/K1014T, GC CA D567T/D571K/K1014T, GC CA D567T/D571K, GC CA D56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note= "Wild-type Asp substituted Misc-difference 1014
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAU98037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAU98037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase B or D protein useful for producing as substitutes for and additions to modified starch and paper manufacture, comprises mutations in specific posit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-DEC-2000; 2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      mutans glucosyltransferase GTFB mutant D567T/D571K/K1014T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  95US-0478704.
95US-0482711.
95US-0485243.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98US-0009620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98US-0007999
98US-0008172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98US-0210361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers 567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         တ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note= "Wild-type Lys substituted by Thr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Wild-type Asp substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   by Lys"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       by Thr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a glucan useful
latexes in
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RESULT 11
AAU98038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         cc comprising the glucan (paper sizing/coating agent). The vector is useful cofor producing a glucan in a plant. The method comprises transforming a cc plant cell with the vector, growing the plant cell under plant growing cc conditions to produce a regenerated plant and inducing expression of the collynucleotide for a time sufficient to produce the glucan in the cribuse biphosphate carboxylase small subunit, waxy, brittle-1 and cc ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and cc plant are useful as substitutes for and additions to modified starch cardiant are useful as substitutes for and additions to modified starch cardiants are useful as substitutes for and additions to modified starch cardiants in paper manufacture. Unlike prior art techniques, which crequire input materials that produce chemical effluents, paper continguated input materials, is more cost-effective and composition produced input materials, is more cost-effective and composition in present sequence is not shown in the specification but cardiant of the invention.

Cc was created by the indexer using the GTFB mutant of the invention as AAU98027 and the information in claim 36.
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Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                  S. mutans GTFB mutant I448V/D457N/D567T/D571K/K779Q/K1014T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAU98038 standard; Protein; 1475
                                                                                                                                                                                                                                                                                                                                                                                              amyloplast; vacuole;
                                                                                                                                                                     Misc-difference
                                                                                                                                                                                                                                                                                                                                                                    Streptococcus mutans
                                                                                                                                                                                                Misc-difference
                                                                                                                                                                                                                            Misc-difference
                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                  Misc-difference
                                                                                                                                                                                                                                                                                                              Misc-difference
                                                                      19-DEC-2000;
                                                                                                14-MAR-2002
                                                                                                                            US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 ANDHLSILEAWSDNDTPYLHD 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                . Similarity 21; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ANDHLSILEAWSDNDTPYLHD 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                      2000US-0740274.
    98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
                                                                                                                                                                                                /note= "Wild-type Asp
779
                                                                                                                                                                                                                            /note= "Wild-type 571
                                                                                                                                                                                                                                                       /note= "Wild-type Asp
567
                                                                                                                                                                                                                                                                                  /note= "Wild-type Ile substituted by Val" 457
                                                                                                                                                                      1014
                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                         /note= "Wild-type
                                                                                                                                                                                  /note= "Wild-type Lys substituted by Gln"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%;
                                                                                                                                                                                                                                                                                                                                                                                              paper manufacture; mutant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 119; DB 23; Pred. No. 5.4e-09; ; Mismatches 0;
                                                                                                                                                                                                                                           Asp
                                                                                                                                                         Lys
                                                                                                                                                                                                                                                                        substituted
                                                                                                                                                          substituted
                                                                                                                                                                                                                 substituted
                                                                                                                                                                                                                                            substituted
                                                                                                                                                                                                                                                                                                                                                                                                      mutein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                            Λq
                                                                                                                                                                                                                 λą
                                                                                                                                                                                                                                            by Thr"
                                                                                                                                                                                                                                                                        by Asn"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                            Thr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1475;
                                                                                                                                                                                                                                                                                                                                                                                                                   molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
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RESULT 12
AAU98039
ID AAU98
XX
AC AAU96
XX

AAU98039 standard; Protein; 1475 AA

AAU98039,

片 Ś

481

ANDHLSILEAWSDNDTPYLHD 21 ANDHLSILEAWSDNDTPYLHD

0

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CC D557TJ, X1014T, D457N/D567T, D457N/D57LK/K779Q/K1014T,
CC D557TJ/S71K/K1014T, 1448V/D457TJ/D57LK/K779Q/K1014T,
CC (163A/X170A/X171A, and K779Q or a GTF D polypeptide having
CC (163A/X170A/X171A, and K779Q or a GTF D polypeptide having
CC (164TJ/D789BS, Also included are a glucan produced by the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan produced by the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan produced by the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan produced by the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan produced by the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan encoding the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan encoding the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan encoding the GTF mutant,
CC (164TJ/D789BS, Also included are a glucan encoding the GTF mutant,
CC (164TJ/D789BS, Also included are a transgenic plant comprising and/or
CC (164TJ/D789BS, Also included are anyloplast and/or vacuole or a maize line
CC (164TJ/D789BS, Also included are anyloplast and/or vacuole or a maize line
CC (164TJ/D789BS, Also included in the amyloplast and/or vacuole or a maize line
CC (164TJ/D789BS, Also included in the amyloplast and/or vacuole or a maize line
CC (164TJ/D789BS, Also included in the amyloplast of plant cannot a paper sizing the glucan in plant included in the amyloplast of potato or mutant and a paper
CC (164TJ/D789BS, Also included in paper manifacture. Unlike prior art techniques, which
CC (164TJ/D789BS)
CC (164TJ/D789BS, Also included in paper manifacture. Unlike prior art techniques, which
CC (164TJ/D789BS)
CC (164TJ/D789BC)
CC (164TJ/D789C)
CC (164TJ/D789C)
CC (
Query Match
Best Local S
Matches 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (NICH/)
                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (GTF) B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       substitutes for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 invention an isolated protein comprising a glucosyltransferase F) B polypeptide having changes at position from I448V, D457N, T1, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NICHOLS
  l Similarity
21; Conserv
                                                                                     1475
      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                       AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     e B or D protein useful for producing a glucan useful and additions to modified starch and latexes in
      100.0%; Score 119; DB 23; 100.0%; Pred. No. 5.4e-09; cive 0; Mismatches 0;
                                                  23;
                                                Length 1475;
               Indels
               0,
               Gaps
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cc (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T599D, T589E, N471D, N471D/T589E. Also included are a glucan produced by the GTF mutant, CC N471D/T589E. Also included are a glucan produced by the GTF mutant, CC an isolated polymucleotide which encodes P1 or P2, or its complementary comprometer, a vector comprising the polymucleotide operably linked to a promoter, a vector comprising the polymucleotide operably linked to a promoter, a vector comprising the polymucleotide operably linked to a promoter, a vector of the transgenic plant comprising the complementary coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed comprising the mutant GTF, wild type or, starch, a later, cc thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line cc deficient in starch biosynthesis, transformed with a gene encoding a glucan (paper sizing/coating agent). The vector is useful comprising the glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing to polynucleotide for a time sufficient to produce the glucan in the cc conditions to produce a regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from componence of the plant and plant, and glucan in the cc plant and plant, and glucan in paper manufacture. Unlike prior art techniques, which cc and latexes in paper manufacture. Unlike prior art techniques, which cc and latexes in paper manufacture contains a fill and the fill and contains a manufacture. Which can be produced the fill as substitutes for and additions to modified starch can be produced to the accordance the fill and contains to modified starch can be produce
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19-DEC-2000;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              paper
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 invention an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              manufacture, comprises mutations in specific
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        glucosyltransferase GTFB mutant YYY169-171AAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000US-0740274
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 isolated protein comprising
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a glucosyltransferase on from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  positions
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Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027
                                                                                                                                                                                                                                                                                                                                                                                                                                            11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
20-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S. mutans
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAU98040 standard;
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D57T, D457N/D57TK, D567T/D571K, D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-DEC-2000; 2000US-0740274.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          coating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27-AUG-2002
                                                                                                                                                                                                         Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US2002031826-A1
                                                                                                                                                                                                                                                                                                      WPI; 2002-414332/44.
                                                                                                                                                                   Claim 36; Page
                                                                                                                                                                                                                                                                                                                                                                                                (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the information in claim 36.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                         S
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1475 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      vacuole; paper manufacture;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mutans
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95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                -; 44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    98US-0210361
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note= "Wild-type Lys substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entry)
                                                                                                                                                                   English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 119; DB 23;
Pred. No. 5.4e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTFB mutant K779Q.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  501
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mutant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1475;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
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CC an isolated polymucleotide which encodes Pl or P2, or its complementary CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polymucleotide polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polymucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell controduced with the vector, a transgenic plant comprising the vector, a transgenic plant comprising the coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan in a plant for producing a glucan producing a glucan producing a glucan producing a glucan in a plant. The wethod comprises transforming a glucan in a plant the wector is useful comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan in a plant the method comprises transforming a conditions to produce a regenerated plant and inducing expression of the conditions to produce a regenerated plant to produce the glucan in the conditions to produce the vector contains a transit sequence from the regular conditions to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. C glucans are useful as substitutes for and additions to modified starch c and latexes in paper manufacture. Unlike prior at techniques, which c require input materials that produce chemical effluents, paper manufacture unlike prior at techniques, which c require input materials, is more cost-effective and c properties and impart gloss to the paper during coating step.

The present sequence represents a GTFB mutant of the invention.

The present sequence is not shown in the specification but the coating as AAU98027 and the invention in c
RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Streptococcus mutans monoclonal antibody-related protein #1
                                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAU79284 standard; Protein; 1476 AA
                                                                                    WPI; 2002-448101/48.
                                                                                                                                                                                   04-OCT-2000; 2000JP-0304889
                                                                                                                                                                                                                                          04-OCT-2000; 2000JP-0304889
                                                                                                                                                                                                                                                                                           16-APR-2002
                                                                                                                                                                                                                                                                                                                                                 JP2002114709-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                         anti-caries;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Antibody;
                             Anti-caries agent composed
                                                                                                                                        (UYNI-) UNIV NIPPON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           481
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dental caries; water insoluble glucan synthetase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                         glucosyl transferase-B; immunotherapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ΑΑ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.0%; Score 119; DB 23; 100.0%; Pred. No. 5.4e-09;
                                      of a monoclonal antibody against
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
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RESULT 15
RAU98028
ID AAU98
XX AAU98
XX AAU98
XX AAU98
XX Gluce
CX Gluce
XX AMPL;
PR 11-D;
PR 07-J
PR 16-J
PR 16
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by streptococcus mutans, particularly mouse-hybridoma MHP136 (FERM P-17566) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosy transferase B. The monoclonal antibody specifically inhibits water...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       inhibitory enzyme against water insoluble glucan synthetase of glucosyltransferase-B (GTF-B) of Streptococcus mutans \,\, -
                                                                                                                                                                                                                                                                                                                                                                                                                                                             11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequence represents a Streptococcus mutans monoclonal antibody-related
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transferase-B and is used in the immunotherapy of dental carries. This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S. mutans glucosyltransferase GTFC.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      coating composition; amvloplast; vacuole;
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                                                                                                                                                                           Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                          Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                           20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19-DEC-2000;
The invention an isolated protein comprising a glucosyltransferase (GTP) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,
                                                                                              Disclosure; Page 30-33; 44pp; English.
                                                                                                                                                   paper
                                                                                                                                                                                                                                                            N-PSDB; ABK52939.
                                                                                                                                                                                                                                                                                                                                                                                        (NICH/)
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                                                                                                                                                      manufacture, comprises
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                                                                                                                                                                 mutations
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CC V169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CC changes at positions from T589D, T589E, N471D, M471D/T589D, and CR 471D/T589B. Also included are a glucan produced by the GTF mutant, CC parmoter, a vector comprising the expression cassette comprising the polymucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, comprising the glucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding the glucan in a plant transforming a glucan in a plant cell with a gene encoding the starch biosynthesis, transformed with a gene encoding a conditions of glucan and starch where CC deficient in starch biosynthesis, transformed with a gene encoding a glucan in a plant. The method comprises transforming a CC comprising the glucan (paper sizing/coating agent). The vector is useful CC comprising the glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant and inducing expression of the CC polymucleotide for a time sufficient to produce the glucan in the CC polymucleotide for a time sufficient to produce the glucan in the CC plants are useful as substitutes for and additions to modified starch conditions to produce in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which centure input materials that produce chemical effluents, paper conditions to modified starch conditions to produce a paper deficient to produce axibit the
Sequence
      1375 AA;
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S 20; Conservative

Query Match Best Local S Matches 20 h 92.4%; Score 110; DB 23; Length 1375; Similarity 95.2%; Pred. No. 1.1e-07; 0; Mismatches 1; Indels

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Search completed: November 13, 2003, 09:38:26
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RESULT 2 JT0345 dextransucrase (EC 2.4.1.5) precursor - Streptococcus mutans () dextransucrase sucrose 6-glucosyltransferase C, Species: Streptococcus mutans C;Date: 31-Mar-1992 #sequence_revision 31-Mar-1992 #text_chang C;Accession: JT0345; C33135 C;Accession: JT0345; C33135 R;Udda, S.; Shiroza, T.; Kuramitsu, H.K. Gene 69, 101-109, 1988 A;Title: Sequence analysis of the gtfC gene from Streptococcus A;Reference number: JT0345; MUID:89137980; PMID:2976010 A;Accession: JT0345 A;Molecule type: DNA	RESULT 1 B33135 gtfB protein precursor - Streptococcus mutans C;Species: Streptococcus mutans C;Species: Streptococcus mutans C;Cadecesion: B33135; A33128 C;Date: 23-Oct-1990 #sequence revision 23-Oct-1990 #text_change C;Accession: B33135; A33128 C;Cateriol. 169, 4263-4270, 1997 A;Title: Sequence analysis of the gtfB gene from Streptococcus A;Reference number: A33135; MUID:87308013; PMID:3040685 A;Recession: B33135 A;Status: preliminary A;Molecule type: DNA A;Residues: 1-1475 <shi> A;Cross-references: GB:M17361; NID:g153639; PIDN:AAA88588.1; PI A;Cross-reference: GB:M1</shi>	30 46 38.7 400 2 F98138 hypot 31 46 38.7 417 2 AE3149 glycc 32 46 38.7 476 1 S58229 conss 33 45.5 38.2 96 2 E81786 34 45 37.8 148 2 862732 35 45 37.8 309 2 D95905 hypot 45 37.8 309 2 D95905 hypot 45 37.8 309 2 D95905 hypot 45 37.8 1090 2 AG1749 glycc 38 45 37.8 1091 2 AF1380 glycc 45 37.8 1159 2 T43461 prob 40 45 37.8 1159 2 T43461 prob 41 44.5 37.4 210 2 H83332 conss 42 44 37.0 155 2 AD2392 hypot 43 44 37.0 247 2 PQ0178 glycc 44 37.0 331 1 DEECG3 45 44 37.0 331 2 H90939 glycc 51 44 37.0 331 2 H90939 glycc
utans (strain GS-5) t_change 24-Sep-1999 ococcus mutans GS-5.	_change 15-Oct-1999 ccoccus mutans. (8.1; PID:g153640)90 uslation uslation uslation uslation uslation o; Gaps 0;	hypothetical prote glycosyltransferas salicylate biosynt conserved hypothet hypothetical prote guanidinoacetate N conserved hypothetical prote glycosidase homolo glycosidase homolo probable phosphodi conserved hypothet transcription reguglyceraldehyde-3-p glyceraldehyde-3-p glyceraldehyde-3-p

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J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene
A;Reference number: A33135; MUID:87308013; P
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C;Keywords: duplication; glycosyltransferase; hexosyltransferase
F;1-34/Domain; signal sequence #status predicted <SIG>
F;35-1375/Product: glucosytransferase #status predicted <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A,Description: catalyzes the synthesis of both water-soluble and water-insoluble glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Gene: gtfC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                glucosyltransferase precursor - Streptococcus sobrinus
C;Species: Streptococcus sobrinus
C;Date: 28-Aug-1992 #sequence_revision 28-Aug-1992 #text_change 15-Oct-1999
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A41483
glucosyltransferase (EC 2.4.1.-) gtfS precursor - Streptococcus sobrinus
Glucosyltransferase (EC 2.4.1.-) gtfS precursor - Streptococcus sobrinus
C;Species: Streptococcus sobrinus
C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change 15-Oct-1999
C;Accession: A41483
R;Gilmore, K.S.; Russell, R.R.B.; Ferretti, J.J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross_references: GB:D90213; NID:g217032; PIDN:BAA14241.1; PID:d1014946; PID:g217033
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A;Molecule type: DNA
A;Residues: 1-1592 <ABO>
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A; Accession: A38175
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                                                                                                                                             RESULT 4
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   . Bacteriol. 173, 989-996, 1991
,Title: Peptide sequences for sucrose splitting and glucan binding within Streptococcus
,Reference number: A38175; MUID:91123227; PMID:1704006
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Best Local S
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Best Local :
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18; Conserv
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95.2%;
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homology <CP4>
homology <CP5>
homology <CP6>
homology <CP7>
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homology <CP2>
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Pred. No. 1.2e-08;
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Pred.
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Infect. Immun. 58, 2452-2458, 1990
A;Title: Analysis of the Streptococcus downei gtfS gene, A;Reference number: A41483; MUID:90316665; PMID:2142479
A;Recession: A41483
A;Rolecule type: DNA
A;Residues: 1-1365 <GIL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Title: Nucleotide sequence of the Streptococcus mutans A;Reference number: A45866; MUID:91100958; PMID:2148600 A;Streptococcus mutans A;Streptoc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Gene: gtfS
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
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F;1127-1146/Domain: cpl repeat homology <CP2>
F;1127-1146/Domain: cpl repeat homology <CP3>
F;1192-1211/Domain: cpl repeat homology <CP4>
F;1257-1276/Domain: cpl repeat homology <CP4>
F;1277-1297/Domain: cpl repeat homology <CP5>
F;1321-1340/Domain: cpl repeat homology <CP8>
F;1341-1361/Domain: cpl repeat homology <CP6>
F;1341-1361/Domain: cpl repeat homology <CP6>
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C;Accession: A45866
R;Honda, O.; Kato, C.; Kuramitsu, H.K.
J. Gen. Microbiol. 136, 2099-2105, 1990
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C;Superfamily: cpl repeat homolo:
C;Keywords: glycosyltransferase;
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                                                                                                                                                                                                                                           probable dextransucrase (EC 2.4.1.5), extracellular - Leuconostoc mesenteroides C;Species: Leuconostoc mesenteroides C;Species: Leuconostoc mesenteroides C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 11-May-2000 C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 11-May-2000
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R;Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, FEMS Microbiol. Lett. 159, 307-315, 1998
A;Title: Cloning and sequencing of a gene coding for an A;Reference number: Z20981; MUID:98164374; PMID:9503626
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                A; Cross-references: EMBL:
                                                             A;Status: preliminary; translated from GB/EMBL/DDBoA;Molecule type: DNA....
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Experimental source:
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15; Conservative
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Pred. No. 0.003
1; Mismatches
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       NID:g2766611; PID:g2766612; PIDN:AAB95453.1
B-1299
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glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 C;Accession: T30857 R;Simpson, C.L.; Giffard, P.M.; Jacques, N.A. Infect. Immun. 63, 609-621, 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Description: produces dextran composed only of alpha (1-6) glucosidic bonds C; Keywords: glycosyltransferase; hexosyltransferase
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C; Function:
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A; Residues: 1-1449 <SIM>
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A;Residues: 1-1449 <JAF>
A;Cross-references: EMBL:AF049609; NID:g2935545; PID:g2935546; PIDN:AAC05156.1
glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-
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A; Accession: T30552
                                                                                                                                                                                                                                                                                                                                                             submitted to the EMBL Data Library, February 1998 A;Description: Streptococcus salivarius V1477 gtfN
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Pred. No. 0.0055;
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Pred. No.
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    #text_change 22-Oct-1999
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C;Accession:
R;Simpson, C.
Infect. Immun
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Infect. Immun. 63, 609-621, 1995
A;Title: Streptococcus sallvarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Accession: T30858
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A;Residues: 1-1518 <GIF>
A;Cross-references: EMBL:Z11873; NID:g47526; PIDN:CAA77900.1;
A;Cross-reference extracted from NCBI backbone (NCBIN:81050, NCC;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C;Date: 31-Dec.1993 #sequence revision 31-Dec.1993 #text_change 15-Oct-1999 C;Accession: A44811; S22726; S28809 C;Accession: P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. J. Gen, Microbiol. 137, 2577-2593, 1991 A;Title: Molecular characterization of a cluster of at least two glucosyltrials, Reference number: A44811; MUID:92148377; PMID:1838391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     glyceraldehyde-3-phosphate dehydrogenase (phosphorylating) (EC 1.2.1.12) - Leishmania C,Species: Leishmania mexicana C,Species: Leishmania mexicana C,Species: 11-Dec-1993 #sequence revision 31-Dec-1993 #text_change 03-Jun-2002 C,Date: 31-Dec-1993 #sequence revision 31-Dec-1993 #text_change 03-Jun-2002 C;Accession: B48445; S25142 R,Hannaert, V: Blaauw, M: Kohl, L.; Allert, S: Opperdoes, F.R.; Michels, P.A.M. Mol. Biochem. Parasitol. 55, 115-126, 1992 A;Title: Molecular analysis of the cytosolic and glycosomal glyceraldehyde-3-phosphate A;Reference number: A48445; MUID:93063042; PMID:1435864 A;Accession: B48445
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A;Residues: 1-1577 <SIM>
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C;Keywords: glycosyltransferase; hexosyltransferase
F;1307-1326/Domain: cpl repeat homology <CP4>
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                                                                        A;Cross-references: EMBL:X65220; NID:g9552; C;Superfamily: glyceraldehyde-3-phosphate dcC;Keywords: oxidoreductase
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A; Residues: 1-331 <HAN>
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Query Match 47. Best Local Similarity 52. Matches 10; Conservative
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    Score 57; DB Pred. No. 0.4; 2; Mismatches
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NCBIP: 81052)
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submitted to the EMBL Data Library, A; Reference number: S22726
A; Accession: S22737
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C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
F;1456-1475/Domain: cpl repeat homology <CPR>
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A;Residues: 1-1599 <JAC>
A;Cross-references: EMBL:Z11872; NID:947530; PIDN:CAA77898.1; PID:947531
A;Cross-references: EMBL:Z11872; NID:947530; PIDN:CAA77898.1; PID:947531
A;Rixperimental source: AFCC 25975
B;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
B;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
A;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
A;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
A;Title: Molecular characterization of a cluster of at least two glucosy
A;Reference number: A44811; MUID:92148377; PMID:1838391
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A; Residues: 1-51 <GIF>
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                                                                                                                                                                                                                C;Superfamily: acyl carrier protein homology; acetate-CoA ligase homology C;Reywords: carrier protein; phosphopantetheine; phosphoprotein F;511-951/Domain: acetate-CoA ligase homology <ACL1>F;961-934/Domain: acyl carrier protein homology <ACP1>F;1563-2024/Domain: acetate-CoA ligase homology #status atypical <ACL2>F;2399-2467/Domain: acyl carrier protein homology <ACP2>F;2399-2467/Domain: acyl carrier protein homology <ACP3>F;2995-3427/Domain: acetate-CoA ligase homology <ACCI3>F;2995-3427/Domain: acetate-CoA ligase homology <ACCI3
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A;Description: Streptogramin B biosynthesis in Streptomyces pristinaespiralis and A;Reference number: Z20808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        pristinamycin I synthase 3 - Streptomyces pristinaespiralis
C;Species: Streptomyces pristinaespiralis
C;Date: 02-Sep-2000 #sequence_revision 02-Sep-2000 #text_change 01-Dec-2000
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                                                                F;3441-3509/Domain: acyl carrier protein homology <ACP3>
F;4043-4492/Domain: acetate-CoA ligase homology <ACP4>
F;4507-4575/Domain: acyl carrier protein homology <ACP4>
F;998,2431,3473/Binding site: phosphopantetheine (Ser) (covalent)
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A; Residues: 1-4848 < DEC >
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hypothetical protein F18022.160 - Arabidopsis thaliana C.Species: Arabidopsis thaliana (mouse-ear cress) C.Date: 20-Apr-2000 #sequence_revision 20-Apr-2000 #text_change 20-Apr-2000 C.Accession: T48610 R.Bevan, M.; Murphy, G.; Ridley, P.; Hudson, S.; Bancroft, I.; Mewes, H.W.; submitted to the Protein Sequence Database, April 2000 A;Reference number: Z24493 A;Accession: T48610
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A; Accession: T03983
                                                                                                                                                                                                                                                                                                      A;Title: The rf2 nuclear restorer gene of male-sterile T-cytoplasm maize. A;Reference number: Z15177; MUID:96243131; PMID:8650543
                                                                                                                                                                                                                                                                                                                                                      C;Accession: T03983
R;Cui, X.; Wise, R.P.; Schnable, P.S.
                                                                                                                                                                                                                                                                                                                                                                                    C;Species: Zea mays (maize)
C;Date: 23-Apr-1999 #sequence_revision
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N;Alternate names: aldehyde dehydrogenase homolog
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
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A;Experimental source: strain B73
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                                                                                                                           A;Note: rf2
C;Superfamily: aldehyde dehydrogenase (NAD+); aldehyde dehydrogenase homology
F;107-370/Domain: aldehyde dehydrogenase homology <ALD>
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0 chlamydia p
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STRAIN=UALS / ATCC 700 MEDLINE=229563; PubMe MEDLINE=229563; PubMe Ajdic D., McShan W.M., Carson M.B., Primeaux C Li S., Zhu H., Najar F. pathogen."; proc. Natl. Acad. Sci!- FUNCTION: PRODUCTIO OF THEIR ABILITY TO AGGREGATION OF BACT -!- CATALYTIC ACTIVITY: -!- SUBCELLULAR LOCATIO -!- DISBASE: DENTAL CAR -!- MISCELLANEOUS: GTFF: 1,3-LINKED GLUCANS: WATER-SOLUBLE GLUCAS WATER-SOLUBLE GLUCANS -!- SIMILARITY: TO OTH BUNDING PROTEIN FRO -!- SIMILARITY: CONTAil	eel. eel. 04 04 05 07 08 08 09 09 09 11 11 11 11 11 11 11 11 11 11 11 11 11	36.1 36.1 36.1 36.1 36.1 36.1 36.1 36.1
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y Qian Y., ii J.J.; dental THOUGHT THOUGHT THE BECAUSE THE THE THE SIZES SSIZES BOTH GLUCAN-	ransucrase) ans."; Serotype F, cains of	erwinia chr vibrio chol rattus norv mus musculu bos taurus ovis aries gus scrofa oryctolagus homo sapien ajellomyces mycoplasma rattus norv

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EMBL; D88657; BAA26119.1; -.
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InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW_binding_1; 1.
Pfam; PF02324; Glyco hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental caries;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
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ADS -> VDG
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AND MT8148)
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A (IN STRAIN MT4251).
P (IN STRAIN MT4251).
S (IN STRAIN MT4251).
F (IN STRAIN MT4251).
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RESULT 2
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15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-SI precursor (EC 2.4.1.5) (G
(Dextransucrase) (Sucrose 6-glucosyltransferase)
MEDLINE=87308013; PubMed=3040685;
Shiroza T., Ueda S., Kuramiteu H.K.;
Shiroza T., Ueda S., Kuramiteu H.K.;
Sequence analysis of the gtfB gene from Streptococcus mutans.";
J. Bacteriol. 169:4263-4270(1987).

1. PACTERIOL. PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAU OF THE TRAIL PLAQUE BECAU OF THE TRAIL TY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
AGGREGATION GRAPH SURFACES AND FOOD DEBRIS.
1- CATALYTIC ACTIVITY: Sucrose + {1,6}-alpha-D-glucosyl}(N) = D-fructose + {1,6}-alpha-D-glucosyl}(N) = D-SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN=UA159 / ATCC 700610 / Serotype C;
STRAIN=22295063; PubMed=12397186;
MRDI.TNE=22295063; PubMed=12397186;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gene
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GTFC OR SMU.1005.
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Kimura S., Hamada S.;
"Molecular analyses of glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN=MT4239 / Serotype C, MT4245 / Serotype MT4467 / Serotype E, and MT8148 / Serotype C; MEDLINE=98231643; PubMed=9570124;
                                                                                                                                                                                                                                                  STRAIN=UA159 / ATCC 700610 / Serotype C;
MEDLINE=22295063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Perretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Perretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Perretti
                                                                                                                                                                                                                                                                                                                                                                    Streptococcus mutans."
FRMS Microbiol. Lett.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Firmicutes;
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                                                                                                                                                                                             SEQUENCE OF
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Y -> H (IN STRAIN MT4467).

R -> A (IN REF. 1).

ADQDVRVAASTAPSTDGK -> LIKMFALRLARPHQQMA
(IN REF. 1).

H -> L (IN REF. 1).
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Pred. No. 1.
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the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCANBINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 5 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SWISS-PROT entry is copyright. It is produced through a collakeen the Swiss Institute of Bioinformatics and the EMBL outst
European Bioinformatics Institute. There are no restrictions
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MT8148).

MISSING (IN STRAIN MT4245).

I -> V (IN STRAIN MT8148).

T -> A (IN STRAINS GS-5, MT4239,
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V -> I (IN
             MT8148)
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1 AC REPEATS.
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RESULT
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CONFLICT
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01-AUG-1992
01-AUG-1992
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15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
(Gurrose 6-71:000-011-000-011-000-011-000-011-000-011-000-011-000-011-000-011-000-011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRDO
GTF2_S
                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation—the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (Sucrose 6-glucosyltransferase).
Streptococcus downei (Streptococcus sobrinus).
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STRAIN=6715 / Serotype G;
MEDLINE=91123227; PubMed=1704006;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-AUG-1992 (Rel. 23,
01-AUG-1992 (Rel. 23,
15-SEP-2003 (Rel. 42,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      synthetase).";
J. Bacteriol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Streptococcus.
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InterPro; IPR003479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
InterPro; IPR003318; Glyco_hydro_70.
IPfam; PF021473; CW_binding_1; 13.
Pfam; PF02324; Glyco_hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental caries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Abo H., Matsumura T., Kodama T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Peptide sequences
                                                                                EMBL;
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CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.
DISBASE: DENTAL CARTES.
                                                                                                                                                                                                                                    FORMS OF GLUCANS.

SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S. MUTANS.

SIMILARITY: Contains 16 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                 MISCELLANEOUS: GTF I SYNTHESIZES WATER-INSOLUBLE GLUCANS (AL
1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES
WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZE
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                                                                                 D90213; BAA14241.1;
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95.28;
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D -> N (IN STRAIN MT4239).
V -> I (IN STRAINS MT4239 AND MT8148).
S -> P (IN STRAIN MT8148).
S -> P (IN STRAIN MT8148).
TSGNWYYFGNDGYALIGWHYWEGRRYVFDENGVYRVASHD
TSGNWYYFGNDGYALIGWHYWEGRRYVFDENGVYRVASHD
TSSGNWYYFGNDGYALIGWHYWEGRRYFDNFFFFF ->
TRSGNWYFGNDGYALIGWHYWEGRRYFDNFFFFFF
TRSGNWYFGNDGYALIGWHYWFTHERSSLQSVKYVSNTMILIFENKFVIVM
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Pred. No. 3.3e-09;
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01-JUL-1989 (Rel. 11,
15-SEP-2003 (Rel. 42,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
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Ferretti J.J., Gilpin M.L., Russell R.R.B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus downei (Streptococcus sobrinus).
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glucosyltransferase-I precursor (Sucrose 6-glucosyltransferase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P11001;
                                                                                          the Buropean Bioinformatics Institute. There are no rest
use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by ar
entities requires a license agreement (See http://www.isb-
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                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                        Ferretti J.J., Gilpin M.L., Russell R.R.B.;
"Nucleotide sequence of a glucosyltransferase gene from Streptococcus
                 InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 16.
                                                                                                                                             between
                                                        EMBL; M17391; AAC63063.1;
                                                                               or send an email to license@isb-sib.ch)
                                                                                                                                                                                                                                                                                                                                                                  Bacteriol. - FUNCTION:
                                                                                                                                                                                                                                                                                    FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGH TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BEC OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND THE DEBRIS.
CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).
SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                  BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 19 cell wall binding repeats.
                                                                                                                                                                                                          SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-
                                                                                                                                                                                                                                                   MISCELLANEOUS: GTF-I SY
1,3-LINKED GLUCOSE AND
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                                                                                                                                                                                                                                                                            DISEASE: DENTAL CARIES.
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precursor (EC 2.4.1.5)
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GLUCAN-BINDING (APPROXIMATE).
6.5 X TANDEM REPEATS.
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Pred. No. 7
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GLUCOSYLTRANSFERASE-I
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BC0A66D079351ECF CRC64;
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7.6e-09;
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Matches 18
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P29336;
01-DEC-1992
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                                                                                                                                                                                                                                                                                                                                                                                                                          MEDITNE-90316665; PubMed=2142479;

Gilmore K.S., Russell R.R., Ferretti J.J.;

glucosyltransferase that synthesizes soluble glucans.";

Infect Immun 58:2452-2458(1990)

-i- FUNCTION: PRODUCTION OF EXTRACELULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAU OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
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01-DEC-1992 (Rel. 24, Last sequence up
128-FEB-2003 (Rel. 41, Last annotation
Glucosyltransferase-S precursor (EC 2)
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Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
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                                     This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the European Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entitles requires a license agreement (See http://www.isb-sor send an email to license@isb-sib.ch).
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EMBL; M30943; AAA26898.1;
                                                                                                                                                                                                                                                                                                                                                   CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = fructose + {(1,6)-alpha-D-glucosyl}(N+1).

ENZYME REGULATION: GLUCAN SYNTHESIS BY GTF-S IS INDEPENDENT PRIMER GLUCAN UNLIKE GTF-I.
                                                                                                                                                                                                                     SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 10 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                               MISCELLANEOUS: GTF-S
                                                                                                                                                                                                                                                                                                                                       DISEASE: DENTAL CARIES
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CATALYTIC (APPROXIMATE)
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Pred. No. 7.6e-09;
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InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF0473; CW binding 1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                                                                           (Sucrose 6-glucosyltransferase).
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Honda O., Kato C., Kuramitsu H.K.;
"Nucleotide sequence of the Streptococcus
the glucosyltransferase-S enzyme.";
                                                                                                                                                                                                                                                                                         Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                                                                                                                                                                                                                                                                                                   Streptococcus mutans.
MEDLINE=2295063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
MGenome sequence of Streptococcus mutans UA159, a cariogenic o
                                                                                                                                                                                                                                                                                   Streptococcus
                                                                                                              FEMS
                                                                                                                    "Molecular analyses of glucosyltransferase Streptococcus mutans.";
                                                                                                                                                      STRAIN=MT4239 / Serotype C, MT4245 / Serotype E, MT4251 / MT4467 / Serotype E, and MT8148 / Serotype C; MEDLINE=98231643; PubMed=9570124;
                                                                                                                                                                                   SEQUENCE FROM N.A.
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                                                                                             SEQUENCE FROM N.A.
                                                                                                                                        Kimura S., Hamada S.;
                                                                                                                                                Fujiwara T., Terao Y., Hoshino T.,
                                        "Genome sequence
                                                                                                                                                                                                                                                                                                                                                                                           σ
                                                                                                                                                                                                    Gen. Microbiol. 136:2099-2105(1990).
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                                                                                                             Microbiol. Lett. 161:331-336(1998)
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069383; 069386; 069389; 069392; 069398;
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GLUCOSYLTRANSFERASE-S.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE TH AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + { (1,6)-alpha-D-glucosyl} (N) = fructose + { (1,6)-alpha-D-glucosyl} (N+1).

SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CARIES.

MISCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALMISCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS).
                                                                                                                                                                                                                                                                                                                                     SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOM
BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 6 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                                                                                                                               NISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPH 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES FORMS OF GLUCANS.
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VARIANT 76	VARIANT 726 VARIANT 726	-	-				VARIANT 313	-	S D		VARIANT 255		-	VARIANT 135		•	_	- 00	on 1	VARTANT 5	VARIANT 19		-1	1360	REPEAT 1306				Complete proteome.	Pram; Prozdza; Transferase; Gl	InterPro; IPROC	EMBL; AE014932;	EMBL; D88662; E	EMBL; D88656; E EMBL; D88656; E	M29296;
52 762	26 732 26 730			350			.3 313		288		255			135			3 113		68		9 19						7 1462	.5	ome.	lycosyltransf	03318; Glyco_hydro_	14932; AAN58619.1; IPR002479; CW bin	D88662; BAA26115.1; D89979; BAA26121.1;	BAA26103.1; - BAA26107.1; - BAA26111.1; -	٠,
T -> A (IN STRAINS GS-5, MT4239, MT4245, MT4251, MT4467 AND MT8148).	TDGGSEA -> ADKGN (IN STRAINS WT4239 AND MT4245)	(IN STRAIN MT4239).	. ·	Î	-> F (IN STRAIN MT4239).	-> K (IN	Î	(TN	MT4251). D -> N (IN STRAINS MT4239, MT4245 AND	-> D (IN		T4251,	-> T (-> V (IN STRAIN MT4245).	MISING. MISING.	A -> V (IN STRAINS MI4239, MI4249 515	-> I (IN STRAINS MI4239	-> T (IN STRAINS MT4251 AND	-> S (IN STRAINS MT4239	MT4467).	MT4467 AND MT8148).	51, MT4467 AND MT814	-> H (IN STRAINS		2 :	D. CO. Shirt Shirt Live Constitution of the Co.		POTENTIAL.		Piam; Pr04324; GlycoyItransferase; Signal; Repeat; Dental caries;	hydro_70.	 ding.			

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01-FEB-1994 (Rel. 28, Last sequence update)
28-FEB-2093 (Rel. 41, Last annotation update)
Glyceraldehyde 3-phosphate dehydrogenase, cytosolic (EC 1.2.1.12)
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                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a clother the Swiss Institute of Bioinformatics and the EMBL the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and foentities requires a license agreement (See http://www.isb-sib.or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                               "Molecular analysis of the cytosolic and glycosomal glyceraldehyde-3-phosphate dehydrogenase in Leishmania mexicana.";

Mol. Biochem. Parasitol. 55:115-126(1992).

Mol. Hiochem. Parasitol. 59:115-126(1992).

CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + phosphate + NAD(+) = 3-phospho-D-glyceroyl phosphate + NADH.

-!- PATHWAY: Second phase of glycolysis; first step.

-!- SUBUNIT: Homotetramer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Leishmania mexicana.
Eukaryota; Euglenozoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAPC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE .....
STRAIN-SSp. Mexicana;
MEDLINE-93063042; PubMed-1435864;
MEDLINE-93063042; PubMed-1435864;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Michels P.A.M.;
                                  InterPro; IPR006424; GAPDH-I
Pfam; PF00044; gpdh; 1
Pfam; PF02800; gpdh_C; 1.
                                                                                                                       PIR; B48445; B48445.
HSSP; P06977; 1GAD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (GAPDH).
                                                                                                InterPro; IPR000173;
                                                                                                                                                                                                                                                                                                                                                                                                     SUBCELLULAR LOCATION: Cytoplasmic.
SIMILARITY: Belongs to the glycera
                                                                                                                                                                                                                                                                                                                                                                                 dehydrogenase family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       _TaxID=5665;
                                                                                                                                                                X65220;
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15; Conserv
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                                                                                                                                                                       CAA46323.1;
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1425
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71.4%;
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                                                                                                       GAP_dhdrogenase
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E -> K (IN STRAINS MT4245 AND MT4251).

IG -> IR (IN STRAIN MT4245).

G -> R (IN STRAIN MT4245).

G -> R (IN STRAIN MT4239).

H -> Q (IN STRAIN MT4239).

S -> N (IN STRAIN MT4239).

Y -> C (IN STRAIN MT4251 AND MT4467).

F -> L (IN STRAIN MT4245).

Q -> P (IN STRAIN MT4245).

K -> T (IN STRAIN MT4245).

K -> T (IN STRAIN MT4245).

G -> R (IN STRAIN MT4245).

R -> K (IN STRAIN MT4245).
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Allert S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       330
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0.0012;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Opperdoes F.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5; Indels
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                                                                                                                                                                                                                                                                                                                                   a collaboration -
MBL outstation -
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Best Local S
Matches 10
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TIGRO1534; C....
PROSITE; PS00071; GAPDH; 1.
PROSITE; PS00071; GAPDH; 1.
Glycolysis; Oxidoreductase; NAD.
INIT MET 0 0 BY SIMILARITY.
INIT MET 10 0 BY SIMILARITY.
ACTIVATES THIOL GROUP DURING 175 175 MW; ED4B6D8E8A207F1E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYBHK SALTI
P58587;
28-FEB-2003
28-FEB-2003
15-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE-21534947; PubMed=11677608;

MEDLINE-21534947; PubMed=11677608;

Maintenant Compan G., James K.D., Thomson N.R., Pickard D., Waintenant C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia Churcher C., Mungall K.L., Bentley S.D., Holden M.T. Connerton P., Baker S., Basham D., Brooks K., Chillingworth T., Connerton P., Cronin A., Davis P., Davies R.M., Dowd L., White N., Farrar J., Cronin A., Davis P., Davies R.M., Dowd L., White N., Jagels K., Feltwell T., Hamlin N., Haque A., Hien T.T., Holroyd S., Jagels K., Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C., Quail M., Rutherford K., Simmonds M., Skelton J., Stevens K., Rutherford K., Simmonds M., Skelton J., Stevens K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SALTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Complete enterica s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Proteobacteria; Gammaproteobacteria;
Enterobacteriaceae; Salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YBHK OR STY0835 (
Salmonella typhi
                                                                                                                                                                                                                                                                                                            STRAIN-TY2 / ATCC 700931;
MEDLINE=22531367; PubMed=12644504;
MEDLINE=22531367; PubMed=12644504;
Deng W., Liou S.-R., Plunkett G. III, Mayhew G.F., Rose D.J.
Burland V., Kodoyianni V., Schwartz D.C., Blattner F.R.;
Burland V., Kodoyianni V., Schwartz D.C., Blattner Typhi s
"Comparative genomics of Salmonella enterica serovar Typhi s
and CT18.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                       INDEXTO: IPROVACUE: 1.
InterPro: IPROVACUE: 1.
Pfam; PR01933; UPF00052; 1.
Pfam; Protein; Complete
Pfam; Protein; Complete
Pfam; 32656 MW;
                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a collaboratio between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it most profit institutions as long as its content is in no was modified and this statement is not removed. Usage by and for commercia entitles requires a license agreement (See http://www.isb-sib.ch/announce or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Whitehead S., Barrell B.G.;
                                                                                                                                                                                                                                                                            -!- SIMILARITY: Belongs to the UPF0052 family.
                                                                                                                                                                                                                                                                                             J. Bacteriol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nature 413:848-852(2001).
                                                                                        EMBL; AL627268; CAD05249.1; -.
EMBL; AE016841; AAO69704.1; -.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                             e genome sequence of a multiple drug resistant Salmonella serovar Typhi CT18.";
                                                                                                                                                                                                                                                                                                                                                                                                                  FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (Rel. 41, Created)
(Rel. 41, Last sequence update)
(Rel. 42, Last annotation updat
UPF0052 protein ybhK.
                                                                                                                                                                                                                                                                                                 185:2330-2337(2003).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OR T2086
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    318
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2218471211E185C3 CRC64;
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                                                                                                                                                                 noved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
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Length 302
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hia M.,
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Query Match

Score

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Matches
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28-FEB-2003
15-SEP-2003
                                                                                                                                                                                                                    TUL16 EBV
P03221;
21-JUL-1986
21-JUL-1986
15-DEC-1998
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Enterobacteriaceae; Salmonella.
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LT 10
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the European Bioinformatics Institute. There are no rest
use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by an
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STRAIN=LT2 / SGSC1412 / ATCC 700720;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 YBHK SALTY
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InterPro; IPR002882; U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a copyright. It is produced through a constitute of Bioinformatics and the EMBL
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                          Viruses; dsDNA viruses,
Gammaherpesvirinae; Lymm
NCBI_TaxID=10377;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hypothetical SEQUENCE 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF01933; UPF0052; 1.
Hypothetical protein; Complete
SEQUENCE 302 AA; 32626 MW;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Complete genome sequence of Salmonella enterica serovar Typhimurium
                                                                                              Epstein-barr virus (strain B95-8) (Human herpesvirus
Viruses; dsDNA viruses, no RNA stage; Herpesviridae;
                                                                                                                                                                                             BGLF2
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                                                                                                                                                                                          protein.
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nilarity 50.0%;
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1; Mismatches
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Pred. No. 2
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38A84708A1E185C3 CRC64;
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ou S., Layman I
, Mulvaney E.,
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MEDILINE=92113548; PubMed=1662696;

Chen M.R., Hsu T.Y., Lin S.W., Chen J.Y., Yang C.S.;

Chen M.R., Hsu T.Y., Lin S.W., Chen J.Y., Yang C.S.;

Choning and characterization of cDNA clones corresponding to 
"Cloning and characterization of cDNA clones corresponding to 
transcripts from the BamHI G region of the Epstein-Barr virus geno 
and expression of BGLP2.";

J. Gen. Virol. 72:3047-3055(1991).

J. Gen. Virol. 72:3047-3055(1991).

J. Gen. Virol. 72:3047-3055(1991).

HSV-6 ORF11R, EHV-1 46, HCMV UL94, EBV BDLF2, AND VZV 44.
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01-MAR-1989
01-MAY-1992
28-FEB-2003
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MEDLINE=84270667; PubMed=6087149;
Baer R., Bankier A.T., Biggin M.D.,
Gibson T.J., Hatfull G., Hudson G.S.
Tuffnell P.S., Barrell B.G.;
"DNA sequence and expression of the
Nature 310:207-211(1984).
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PIR; C43044; QQBE40.
InterPro; IPR004286; UL16_UL94.
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EMBL; V01555;
Misbet O., van Beeumen U., Misset O., van Beeumen U., van Beeumen 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Euglenozoa;
NCBI_TaxID=5702;
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Pfam; PF03044; UL16_UL94;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=91249838; PubMed=2040303;
Michels P.A.M., Marchand M., Kohl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN=427
                                                                                                                                                                                                               PRELIMINARY SEQUENCE OF 1-85
MEDLINE=87161817; PubMed=383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Michels P.A.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
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(Rel. 22, Last sequence update
(Rel. 41, Last annotation update)
(Rel. 41, Last dehydrogenase,
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                                                                                                                                                                                                                                                                                                                                                  198:421-428(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                          Trypanosoma
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                                                                                                                                                                                                                                PubMed=3830153;
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, Satchwell S.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    update)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  update)
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a distant
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RESULT 12
G3P_COCPO
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Best Local S
Matches 10
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glycolysis; (
INIT MET
BINDING
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; X53472; CAA37568.1; PIR; S16091; DEUTGC. HSSP; P06977; 1GAD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VARIANT
CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRINTS; PF
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15-SEP-2003
15-SEP-2003
15-SEP-2003
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                                                                                                                                                                                                                                                                                                                                                             G3P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam;
                                          Hung C.-Y., Yu J.-J., Cole G.T.;

Hung C.-Y., Yu J.-J., Cole G.T.;

"Isolation and evaluation of expression of the glyceraldehye-3-
phosphate dehydrogenase gene of Coccidioides immitis.";

Submitted (JUL-2000) to the EMBL/GenBank/DDBJ databases.

-i- CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + phosphate

-i- AND(+) = 3-phospho-D-glyceroyl phosphate + NADH.

-i- PANTHWAY: Second phase of glycolysis; first step.

-i- SUBCULTLAR LOCATION: Cytoplasmic (By similarity).

-i- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).

-i- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
                                                                                                                                                                                                                        Bukaryota; Fungi; Ascomycota; Pezi:
Onygenales; mitosporic Onygenales;
NCBI_TaxID=199306;
                                                                                                                                                                                                                                                                                            Glyceraldehyde
                                                                                                                                                                                 STRAIN=C735;
                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                 Coccidioides posadasii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . J. Biochem. 162:501-507(1987).

CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + phosphate 
CATALYTIC ACTIVITY: D-glyceroyl phosphate + NADH.

RAD(+) = 3-phospho-D-glyceroyl phosphate + NADH.

PATHWAY: Second phase of glycolysis; first step.

SUBCELLULAR COCATION: Cytoplasmic.

SUBCELLULAR LOCATION: Cytoplasmic.

SIMILARITY: Belongs to the glyceraldehyde 3-phosphate
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PF02800; gpdh_C; 1.
S; PR00078; G3PDHDRGNASE.
                                  dehydrogenase
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10; Conserv
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149
176
72
56
60
330 /
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
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(Rel. 42, Last sequence update)
(Rel. 42, Last annotation update)
de 3-phosphate dehydrogenase (EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AA;
                                                                                                                                                                                                                                                                                                                                                                STANDARD;
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56
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GAPDH-I.
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ACTIVATES THIOL GROUP DURING
R -> T (IN REF. 2).
A -> T (IN REF. 2).
Q -> K (IN REF. 2).
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4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 47.5;
Pred. No. 4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            R -> I.
A -> T (IN REF. 2).
Q -> K (IN REF. 2).
7E1F0AFD4091E7C5 CI
                                                                                                                                                                                                                                          Pezizomycotina; Eurotiomycetes; ales; Coccidioides.
                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               21
                                                                                                                                                                                                                                                                                                                                                                   337
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                                                                                                                     phosphate
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MBL outstation -
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RESULT 13
SC35_YEAST
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Best Local :
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                                                                                                                                                FUNC1:

MEDLINE=982/...

VanRheenen S.M., (a. VanRheenen S.M., (a. VanRheenen S.M.)

"Sec35p, a novel peripher...

"ac35p, a novel peripher...

"ac43943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BINDING
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL; AF288134; AAN76496.1; ...
InterPro; IPR006424; GAPDH-I.
InterPro; IPR000173; GAP_dhdrogenase.
pfam; PR00044; gpdh; 1.
Pfam; PF02800; gpdh_C; 1.
PRINTS; PR00078; G3PDHDRGNASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SC35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Glycolysis; Oxidoreductase; NAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PROSITE; PS00071; GAPDH;
                                                                                                                                                                                                                                                                                                                                                                                                      Saccharomyces cerevisiae (Baker's yeast).

Bukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;

Saccharomycetales; Saccharomycetaceae; Saccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-OCT-1996
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P53271;
01-OCT-1996
                                                                                                                                                                                                                                                                       unknown open reading frames, of Ty and three tRNA genes."; Yeast 13:171-176(1997)
                                                                                                                                                                                                                                                                                                                           STRAIN=S288c / FY1679;
MEDLINE=97197982; PubMed=9046098;
van Dyck L., Tettelin H., Purnell
                                                                                                                                                                                                                                                                                                                                                                                                                                               SEC35 protein.
SEC35 OR YGR120C OR G6324.
                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A. STRAIN=S288c / FY1
                                                                                                               MEDLINE=21563418; PubMed=11703943;
Whyte J.R., Munro S.;
"The Sec34/35 Golgi transport complex is related
                                                                                                                                                                                                                                                                                                            van Dyck L., Tettelin H., Purnelle B., Goffeau A.;
"An 18.3 kb DNA fragment from yeast chromosome VII carries
                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=4932;
                                                                                         traffic
                                                                                                  defining a family
             1
                                   FUNCTION: Required for ER for viability.
SUBUNIT: Component of the
            eight different proteins.
SUBCELLULAR LOCATION: Membrane-associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YEAST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              303
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9; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NDHFIKLVAWYDNEWGY 319
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                                                                1:527-537(2001).
ION: Required for
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178
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(Rel. 34, Last sec
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (Rel.
                                                                                                                                                                                                           SUBCELLULAR LOCATION.
888; PubMed=9606204;
M., Cao X., Lupashin V.V.,
vel peripheral membrane pro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       34, Last
41, Last
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52.9%;
                                                                                                    complexes involved
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence update)
annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 47;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACTIVATES THIOL GROUP DUR ; 62EAB34CA536D4F2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GLYCERALDEHYDE 3-PHOSPHATE ACTIVATES THIOL GROUP DURII
                                                                                                                                                                                                                                                                                                       the
                                       Sec34/Sec35 complex which
                                                                   to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
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                                                                   Golgi vesicle
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5.7;
                                                                                                       s related to the exocyst, in multiple steps of men
                                                                                                                                                                                                              Barlowe C., Waters
otein, is required
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                                                                                                                                                                                                                                                                                                          an
                                                                                                                                                                                                                                                                                                          Asn synthase,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 337,
                                                                    docking. Not essential
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30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
38-FEB-2003 (Rel. 41, Last amnotation update)
G1yceraldehyde 3-phosphate dehydrogenase (EC G1yceraldehyde 3-phosphate dehydrogenase (EC GAP OR GAPA OR CPN0624 OR CP0123.
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                                                                                                                                                                                                                                                           MEDIINE=20150255; PubMed=10684935;
Read T.D., Brunham R.C., Shen C., Gill S.R., Heidelberg;
White O., Hickey E.K., Peterson J., Utterback T., Berry
Linher K., Weidman J., Khouri H., Craven B., Bowman C.,
Gwinn M., Nelson W., DeBoy R., Kolonay J., McClarty G.,
Gwinn J., Fraser C.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Kalman S., Mitchell W., Marathe R., Lammel C., Fan J., Hyman R.W., Olinger L., Grimwood J., Davis R.W., Stephens R.S.; "Comparative genomes of Chlamydia pneumoniae and C. trachomatis."; Nat. Genet. 21:385-389(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chlamydia pneumoniae (Chlamydophila pneumoniae).
Bacteria; Chlamydiae; Chlamydiales; Chlamydiaceae;
                                                                                                                                                                                                                     "Genome sequences of Chlamydia trachomatis pneumoniae AR39.";
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=83558
Nucleic Acids Res. 28:2311-2314(2000).
-!- CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate
NAD(+) = 3-phospho-D-glyceroyl phosphate + NADH.
                                                   Shirai M., Hirakawa H., Kimoto M., Tabuchi M., Kishi F., Ouchi Shiba T., Ishii K., Hattori M., Kuhara S., Nakazawa T.; "Comparison of whole genome sequences of Chlamydia pneumoniae from Japan and CWL029 from USA.";
                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=99206606; PubMed=10192388;
                                                                                                                                    MEDLINE=20330349; PubMed=10871362;
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GO:000300; C:peripheral membrane protein of membrane fra.
GO:0005625; C:soluble fraction; IDA.
GO:0005615; F:protein binding activity; IPI.
GO:0005688; P:ER to Golgi transport; IGI.
GO:0006888; P:ER to Golgi transport; IGI.
GO:0000301; P:retrograde (vesicle recycling within Golgi).
nsport; Protein transport; Golgi stack; Membrane.
NIBNOE 275 AA; 31799 MW; AA102D086FF3FAD7 CRC64;
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EMBL; AE002173; AAF38
EMBL; AE002547; BAA988
EMBL; AP002547; BAA988
PIR; B72053; B72053.
PIR; E86568; E86568.
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InterPro; IPR006424; GAPDH
Pfam; PF00044; gpdh; 1.
Pfam; PF02800; gpdh C; 1.
Pfam; PF02800; gpdh C; 1.
PRINTS; PR0078; G3PDHDROK
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-!- SUBUNIT: Homotetramer (By similarity).
-!- SUBCELLULAR LOCATION: Cytoplasmic.
-!- SIMILARITY: Belongs to the glyceraldehyde 3
dehydrogenase family.
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Q51508;
01-NOV-1997
01-NOV-1997
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PHCI-2DPAGE; Q9Z7T0;
TIGR; CP0123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Salicylate biosynthesis isochorismate synthase
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PROSITE; PS00071; GAPDH; 1.
                                                                                                                                                                         SEQUENCE FROM N.A.
STRAIN-ATCC 15692 / PAO1;
MEDLINE-96086939; PubMed=7500944;
Serino L., Reimmann C., Baur H., Beyeler M., V
Serino L., Reimmann C., Baur H., Beyeler M., V
"Structural genes for salicylate biosynthesis
                                                                                                                                                                                                                                                                                                                                                                                                           Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                Pseudomonas
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  STRAIN=ATCC 15692 / PAO1;
MEDLINE=20437337; PubMed=10984043;
Stover C.K., Pham X.-Q.T., Erwin A
Hickey M.J., Brinkman F.S.L., Hufn
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STRAIN=ATCC 15692
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RA Gather R.L., Golltry L., Tolentino E., Westbrock-Madman S., Yuan Y., Ra Brody L.L., Spender D.H., Wong G.K.R., Kas A., Lafriig K., Lim R.M., Raiser M.H., Spender D.H., Wong G.K.R.S., Wu Z., Paulsen I.T., Raiser M.H., Hancock R.E.M., Lory S., Olson M.V.; RI "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence of Pseudomonas aeruginosa PAO1, an RT "Complete genome sequence in the Swiss Institute of Bioinformatics and the EMBL outstation between the Swiss Institute of Bioinformatics and the EMBL outstation of the EMBL outstation of the EMBL outstation sequence in the Swiss Institute of Bioinformatics and the EMBL outstation of the EMBL outstation outstation of the EMBL outstation of
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ALIGNMENTS

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Matches 18
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DNA Seq. 4:19-27(1993).
EMBL; D13858; BAA02976.1; -.
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco, hydro, 70.
Pfam; PF01473; CW binding 1; 16.
Pfam; PF02324; Glyco, hydro, 70; 1.
Glycosyltransferase. Signal; Transferase.
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Q59983;
01-NOV-1996
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01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5).
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                                                                                                        SIGNAL
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                                                                                                                                                                                                                                                                                                                                    Streptococcus sobrinus.
                                                                                                                                                                                                                                         MEDLINE=94146405; PubMed=8312602; Sato S., Inoue M., Handa N., Aizawa Y., Isobe
                                                                                                                                                                                                                                                                STRAIN=OMZ176;
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 ANNHVSIVEAWSDNDTPYLHD
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                                                Score 108; DB 2;
Pred. No. 5.5e-08;
3; Mismatches 0
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GLUCOSYLTRANSFERASE-I.

MW; C3C83A57CF3C2BOE CRC64;
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Q9WXJ4;
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Ann. Kagoshima Univ. Dental School 16:23-29(1996).
EMBL, D63570, BAA06792.1;
InterPro; IPR002479; CW_binding.
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 15.
Pfam; PF02324; Glyco_hydro_70; 1.
SEQUENCE 1590 AA; 176058 MW; 9DF7A3F2C6E4FD43 CRC64;
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                                                                                                                                                                                                                                                                                                 Indue M., Fukui K., Miyagi A.;
"S.cricetus glucosyltransferase (gtfS and gtfT)
submitted (MAR-199) to the EMBL/GenBank/DDBJ
BMBL; AB02613; BAA77236.1; -
InterPro; IPR002479; CW binding.
InterPro; IPR002419; GY binding.
InterPro; IPR00318; Glyco.hydro_70.
pfam; pr01473; CW_binding_1; 10.
pfam; pr02324; Glyco.hydro_70; 1.
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Pred. No. 5.5e-08;
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Pred. No. 0.00
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Q9LCJ7;
01-OCT-2000 (TrEMBLrel. 15,
01-OCT-2000 (TrEMBLrel. 22,
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Bacteria; Firmicutes; Lact
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MEDLINE=20169623; PubMed=10705445;

Funane K., Mizumo K., Takahara H., Ko

"Gene encoding a dextransucrase-like
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Biosci. Biotechnol. Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Arguello-Morales M.A., Remaud-Simeon M., Pizzut S., Sarcabal P., Willemot R.M., Monsan P.; Sequence analysis of the gene encoding alternansucrase, a sucrose "Sequence analysis of the gene encoding alternanders. B-1355."; Submitted (CCT-1999) to the EMBL/GenBank/DDBJ databases. EMBL, Ad250172; CAB76565.1; ...
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Pfam; PF02324; Glyco_hydro_70; 1.
SEQUENCE 1016 AA; 110344 MW; 889.
                                                                                                                                                                                                                                                                  InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro 70.
Ipfam; PF01473; CW binding 1; 14.
Pfam; PF02324; Glyco hydro 70; 1.
Glycosyltransferase; Transferase.
SEQUENCE 1477 AA; 164887 MW; E61
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STRAIN=NRRL B-1355;
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Bacteria; Firmicutes; Lact
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P06278; 1VJS.
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ke protein
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Best Local
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STRAIN-NRRI B-1299;

Monchois V., Remaud-Simeon M., Monsan P.,

"Cloning and sequencing of a gene coding
dextrainsucrase (DSRB) from Leuconostoc me
synthesizing only a (1-6) glucan.";

FEMS Microbiol. Lett. 0:0-0 (1998).

FEMS MCGObiol. Lett. 0:0-0 (1998).

FEMS MCGObiol. Lett. 0:0-0 (1998).

FEMS MCGObiol. Lett. 0:0-0 (1998).

InterPro; IPR002479; CW_binding.

InterPro; IPR00318; Glyco.hydro_70.

Pfam; PF01473; CW_binding_1; 14.

Pfam; PF02324; Glyco_hydro_70; 1.

Clycosyltransferase; Transferase.

Clycosyltransferase; Transferase.
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STRAIN=B-742CB;

Kim H.-S., Kim D., Ryu H.-J., Robyt J.F.;

Leuconostoc mensenteroides B-742CB, a dextransucrase gene.";

Submitted (AUG-2000) to the EMBL/GenBank/DDBJ databases.

EMBL; AF294469; AAG38021.1; --

InterPro; IPR002479; CW_binding.

InterPro; IPR003318; Glyco hydro_70.

Pfam; PF01473; CW_binding_T; 14.

Pfam; PF01334; Glyco hydro_70; 1.

Pfam; PF02324; Glyco hydro_70; 1.

Pfam; PF02324; Glyco hydro_70; 1.

Pfam; PF02324; Glyco hydro_70; 1.
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052224;
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01-MAR-2001 (TrEMBLrel. 16,
01-OCT-2002 (TrEMBLrel. 22,
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Bacteria; Firmicutes; Lactobacillales; Leuconostoc
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  ANQHLSILEDWSHNDPEYVKD
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(TrEMBLrel. 06, Last sequence update)
(TrEMBLrel. 22, Last annotation update)
1sferase (EC 2.4.1.5).
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66.7%;
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RESULT Q9LCH3

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EMBL, AB025228; BAA95201.1; ...
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; 61yco hydro_70.
Pfam; PF01473; CW_binding_1; 17.
Pfam; PF02324; Glyco_hydro_70; 1.
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01-OCT-2000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN=ATCC10557;
MEDLINE=20231779;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q54178; Q54247;
01-NOV-1996 (TrEMBLrel.
01-NOV-1996 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Transferase.
                                                                                                                                                                                         STRAIN=CHALLIS;
MEDLINE=92276337; PubMed=1534326;
Sulavik M.C., Tardif G., Clewell!
"Identification of a gene, rgg, w
glucosyltransferase and influence
                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
STRAIN-CHAILIS;
MEDLINE=96157084; PubMed=8586195;
Vickerman M.M., Sulavik M.C., Clewell D.
                                                                                               J. Bacteriol. 174:3577-3586(1992)
EMBL; U12643; AAC43483.1; -.
EMBL; M89776, AAAA6969.1; -.
                                                                                                                                                                                                                                                                                                                                                phase variants.";
Dev. Biol. Stand. 85:309-314(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus gordonii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Glucosyltransferase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q54178
                                                                                                                                                                                                                                                                                                 SEQUENCE OF 1-96 FROM N.A.
                    InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco_hydro_f
Pfam; PF01473; CW binding 1; 18.
Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                                                                                                              Dev. Biol.
                                                                                                                                                                                                                                                                                                                                                                                    "Molecular analysis of Streptococcus gordonii
                                                                                                                                                                       gordonii Challis."
    Transferase.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TaxID=29390;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PubMed=10768934;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             i Challis.
Lactobacillales; Streptococcaceae;
                                                                                                                                                                                             ., Clewell D.B.;
ene, rgg, which red influences the
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Last annotation updat
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
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RESULT 10
Q9ZAR4
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Best Local S
Matches 14
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Best Local
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                                Neubauer H., Bauche A., Mollet B.;
"Isolation and characterization of the dextransur isolation is submitted (UJAN-2001) to the EMBL/GenBank/DDBJ daverHalf AV017384; AAG61158.1; -

InterPro; IPRO03318; Glyco_hydro_70.

InterPro; IPRO03318; Glyco_hydro_70.

Pfam; PF01473; CW binding_1; 6.

Pfam; PF02324; Glyco_hydro_70; 1.

Transferase; Glycosyltransferase.

SEQUENCE 1527 AA; 169835 MW; F9D0DE220BD8966
Query Match
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Q9ZAR4;
01-MAY-1999
01-MAY-1999
01-OCT-2002
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01-OCT-2002
01-MAR-2003
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Submitted (DEC-1996) to the EMBL/GenBank/DDBJ EMBL; U81374; AAD10952.1; -.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding I; 16.
Pfam; PF02324; Glyco hydro 70; 1.
SEQUENCE 1527 AA; 169709 MW; 1D:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bhatnagar R., Singh D.K.S.;
Bhatnagar R., Singh D.K.S.;
"Cloning and Molecular Characterization of Dextransucrase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=1245;
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                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                          NCBI_TaxID=1245;
                                                                                                                                                                                                                                                                                                                             Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lactobacillales;
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                                                                                                                                                                                                                                                                                                                                                                                            Dextransucrase DsrD
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77.8%;
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66.7%;
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    59.7%;
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Pred. No.
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    Score 71;
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                                           F9D0DE220BD89668 CRC64;
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Q8G9Q2;
01-MAR-2003
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01-AUG-1998
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01-MAR-2003 (TrEMBLrel. 23,
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Dextransucrase (EC 2.4.1.5)
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Bacteria; Firmicutes; Laci
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J. Bacteriol. 184:5753-5761(2002).
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                                                                         NON TER
SEQUENCE
                                                                                                                              Submitted (FEB-1998) to the EMBL/Ger
EMBL, AF049609; AACOSTS.1; -
InterPro; IFR002479; CW binding.
InterPro; IFR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
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                                                                                                                                                                                                                                                                                              STRAIN=V1477;
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                                                                                                                                                                                                                                     "Streptococcus salivarius V1477 Submitted (FEB-1998) to the EMBI
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Best Local S:
Matches 13
    SEQUENCE FROM N.A.

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MEDLINE=21958684; PubMed=11960691;

MEDLINE=21958684; PubMed=11960691;

A Hanada N., Fukushima K., Nomura Y., Senpuku H., Hayakawa M.,

A Mukasa H., Shiroza T., Abiko Y.;

Mukasa H., Shiroza T., Abiko Y.;

P Cloning and nucleotide sequence analysis of the Streptococcus in sobrinus gtfU gene that produces a highly branched water-soluble in glucan.",

E Interpro, ippo02479; CM_binding.

Interpro; IPR003318; Glyco_hydro_70.

P Fam; PF01473; CM_binding_1; 6.

DR Ffam; PF01473; CM_binding_1; 6.

DR Ffam; PF01473; CM_binding_1; 6.

PFGm; PF02324; Glyco_hydro_70; 1.
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Soding for primer-independent glucosyltransferases.";
Infect Immun. 63:609-621(1995).
Infect Immun. 63:609-621(1995).
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro_70.
InterPro; IPR003318; Glyco hydro_70.
InterPro; IPR003318; Glyco hydro_70.
InterPro; IPR003318; Glyco hydro_70.
InterPro; IPR003318; Glyco hydro_70; 1.
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Q55264;
Q1-NOV-1996 (TrEMBLrel. 01,
Q1-NOV-1996 (TrEMBLrel. 01,
Q1-OCT-2002 (TrEMBLrel. 22,
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SIGNAL 1
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01-OCT-2002 (TrEMBLrel. 22, Created)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
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MEDLINE=95122197; PubMed=7822030;
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1449 AA;
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Pred. No. 0.21;
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GLUCOSYLTRANSFERASE.
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US-09-210-361-4
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US-09-210-361-6
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US-09-604-957-5
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CY 1 ANDHLSILEAWSDNDTPYLHD 21	Query Match 100.0%; Score 119; DB 3; Length Best Local Similarity 100.0%; Pred. No. 1e-10; Matches 21; Conservative 0; Mismatches 0; Indels	ococcus mutans	; CURRENT FILTING DATE: 1995-04-19; EARLIER APPLICATION NUMBER: 08/478,704 ; EARLIER FILING DATE: 1995-06-07 ; EMPLIER OF SEQ ID NOS: 2 ; NUMBER OF SEQ ID NOS: 2 ; NUMBER OF SEQ ID NOS: 2	RENCE: 0356D PPLICATION NUMBER:	APPLICANT: Nichols, Scott E. TITLE OF INVENTION: Substitutes for Modified Starch and TITLE OF INVENTION: Latexes in Paper Manufacture	RESULT 1 US-09-007-999-2 ; Sequence 2, Application US/09007999 ; Patent No. 6087559 ; GRMERAL INFORMATION:	ALIGNMENTS	34.5 296 4 US-09-328-352-7	41 34.5 270 4 US-09-323-872A-38	41.5 34.9 1048 4 US-09-171-699-10	41.5 34.9 454 4 US-09-	39 42 35.3 989 2 US-08-070-301-16 40 42 35.3 1428 4 US-09-252-991A-30731	42 35.3 288 4 42 35.3 288 4	42 35.3 259 2	42 35.3 211 4 US-08-277-231A-3	43 36.1 2485 3	43 36.1 2466 5	43 36.1 2466 4	43 36.1 2465 3 US-09-100-007	43 36.1 2465 2	
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 1998-01-16
PRIOR PPLICATION NUMBER: 08/478,704
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR APPLICATION NUMBER: 08/008,172
PRIOR APPLICATION NUMBER: 09/008,172
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SOFTWARE: Fasc
SEQ ID NO 2
FENGTH: 1475
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LENGTH: 1475
TYPE: PRT
ORGANISM: Streptococcus mutans
S-09-210-361-2
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Matches 21
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Sequence 4, Application US/09210361
Sequence 4, Application US/09210361
Patent No. 6284479
GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 035/CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
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EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
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Patent No. 64652
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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FILING DATE: 1995-06-07
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EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER FILING DATE: 1996-01-20
EARLIER FILING DATE: 1996-06-07
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 09/08,172
EARLIER APPLICATION NUMBER: 09/482,711
EARLIER APPLICATION NUMBER: 09/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 4
LENGTH: 1375
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PRIOR APPLICATION NUMBER: 08/47
PRIOR FILING DATE: 1995-06-07
PRIOR PELICATION NUMBER: 09/00
PRIOR FILING DATE: 1998-01-20
PRIOR FILING DATE: 1998-01-09
PRIOR FILING DATE: 1995-06-07
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/00
PRIOR APPLICATION NUMBER: 09/00
PRIOR FILING DATE: 1998-01-16
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PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
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CURRENT FILING DATE: 2000-12-19
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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SOFTWARE: FastSEQ for
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TYPE: PRT
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Pred. No. 2.8e-09;
0; Mismatches 1
                                                                             Score 110; DB 4;
Pred. No. 2.8e-09;
0; Mismatches 1
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RESULT 6 US-09-604-957-4 ; Sequence 4, Application US/09604957 ; Patent No. 6486314

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US-09-210-361-6
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US-09-008-172-2
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SEQ ID NO 4
LENGTH: 545
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
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Best Local Similarity
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CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                 Sequence 6, Application US/09210361 Patent No. 6284479
                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                  GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 2
SOFTWARE: FastSEQ for Windows Version 3.0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/09/008,172
CURRENT FILING DATE: 1998-01-16
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILE REFERENCE: 0358D
                                                                                                                   APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes
TITLE OF INVENTION: Latexes in
                                                                                                         FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ENGTH: 1430
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DIJKHUIZEN, LUBBERT
                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
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Substitutes for Modified Starches
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71.4%;
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Pred. No.
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Pred. No. 0.00
1; Mismatches
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RESULT 10 US-09-604-957-5

Sequence 5, Application US/09604957 Patent No. 6486314

GENERAL INFORMATION: APPLICANT: VAN GEEL APPLICANT: DIJKHUI!

VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA DIJKHUIZEN, LUBBERT

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EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1998-01-16
EARLIER FILING DATE: 1998-01-16
EARLIER FILING DATE: 1998-06-07
EARLIER FILING DATE: 1995-06-07
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Patent No. 6465203
GENERAL INFORMATION:
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Best Local Similarity
Matches 15; Conserv
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PRIOR FILING DATE: 1998-01
PRIOR APPLICATION NUMBER: 1995-06
PRIOR FILING DATE: 1995-06
PRIOR APPLICATION NUMBER: 1998-01
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                                                               Matches
                                                                            Best Local Similarity
                                                                                          Query Match
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PRIOR FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: Parior 1995-06-07
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Nichols, TITLE OF INVENTION: 035
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TYPE: PR
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PRIOR FILING DATE: 1995-06-07
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                                                                                                                                                              LENGTH: 14
                                                                                                                                             ORGANISM: streptococcus mutans
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495 AINHLSILEAWSDNDPQYNKD 515
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71.4%;
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Pred. No.
                                                                                Score 75; DB 4;
Pred. No. 0.0014;
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                                                                  Mismatches
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                                                                                                    Length 1430;
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HAKIM

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RESULT 11
US-08-793-824-2
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LENGTH: 523
TYPE: PRT
                                                                        US-08-793-824-2
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: 80 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
Query Match
Best Local Similarity
Matches 13; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
APPLICANT: Simpson, Christine Lynn
APPLICANT: Giffard, Philip Morrison
APPLICANT: Jacques, Nicholas Anthon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: RAHAOUI,
APPLICANT: LEER, RO
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                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
APPLICATION NUMBER: AU PM7643
APPLICATION NUMBER: AU PM7643
APPLICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELEPHONE: 61 2 9957 5944
TELEFAX: 61 2 957 6288
                                                                                                                                                                                                  INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 1577 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Jacques, Nicholas Anthony TITLE OF INVENTION: Genetic ManipulatITLE OF INVENTION: Increase Stored
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: PatentIn Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                          MOLECULE TYPE:
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE: Griffith Hack & Co
STREET: Level 8, 168 Walker Street
CITY: No. 5981838th Sydney
STATE: New South Wales
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ZIP:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
                                                                                                                                              TOPOLOGY:
                                                                                                                                                              STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION: 800
                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: FILING DATE:
                                                                                         ORGANISM:
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                                                                                                                                                                                   amino acid
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                                                                                       Streptococcus salivarius
       Conservative
                                                                                                                                              not relevant
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                      52.9%;
72.2%;
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Pred. No. 0.0018;
1; Mismatches
       0
                        Score 63; DB 2
Pred. No. 0.14;
       Mismatches
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                                           DB 2;
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         <u>ს</u>
                                           Length 1577;
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RESULT 14
US-09-604-957-7
iS-09-604-957-7
; Sequence 7, Application US/09604957
; Patent No. 6486314
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                  ; TYPE: PRT ; ORGANISM: Leuconostoc mesenteroides US-09-499-203-2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388 CURRENT APPLICATION NUMBER: US/09/604,957 CURRENT FILING DATE: 2000-06-28 PRIOR APPLICATION NUMBER: 00201871.1 PRIOR FILING DATE: 2000-05-25 NUMBER OF SEQ ID NOS: 17 SOFTWARE: Patentin Ver. 2.1 SEQ ID NO 6.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 11; Conserv
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SEQ ID NO 2
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                                                                                                                                                                                                 Query Match
Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                               APPLICANT: KOSSMANN, Jens
APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules Encoding Alternansucrase
FILE REFERENCE: 147-196B
CURRENT FELICATION NUMBER: US/09/499,203
CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
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Pred. No.
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Pred. No. 0.13;
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APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 7
LENGTH: 535
TYPE: PAT
ORGANISM: Lactobacillus reuteri
US-09-604-957-7
                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 3, Application US/09604957

Requence 3, Application US/09604957

Patent No. 6486314

GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: RAHAOUI, HAKIM
APPLICANT: REHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
IIILE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION ONDER: US/09/604,957
CURRENT FILING DATE: 2000-05-25
PRIOR FILING DATE: 2000-05-25
                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 3
ENOTH: 1278
TYPE: PRT
ORGANISM: Lactobacillus reuteri
US-09-604-957-3
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US-09-604-957-3
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Search completed: November 13, 2003, 09:47:59
Job time : 14.6351 secs
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APPLICANT: DIJKHUIZEN, LUBBERT
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Minimum DB seq length: Maximum DB seq length:
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Maximum Match 100%
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1: /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*

2: /cgn2_6/ptodata/2/pubpaa/PCT_NEW_PUB.pep:*

3: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*

5: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*

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Copyright (c) 1993 - 2003 Compugen Ltd.
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

15	14	13	12	11	10	9	89	7	6	σ	4	ω	N	ь.	Result No.
46.5	47	47	47.5	47.5	49	49	49	52	60	71	75	75	110	119	Score
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US-09-888-615-73	US-10-067-649-90	US-10-295-693-90	US-10-293-865-24	US-09-344-882-24	US-09-995-749A-2	US-09-995-749A-13	US-09-815-242-14004	US-10-009-823A-1	US-09-995-749A-12	US-09-995-749A-11	US-09-740-274-6	US-09-995-749A-10	US-09-740-274-4	US-09-740-274-2	ID
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ALIGNMENTS

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US-09-740-274-2
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR PELICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR PELICATION NUMBER: 09/007,094
PRIOR FILING DATE: 1998-01-20
PRIOR PELICATION NUMBER: 09/009,620
PRIOR PELICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1998-01-20
PRIOR FILING DATE: 1998-01-20
PRIOR FILING DATE: 1998-01-20
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SEQ ID NO 2
LENGTH: 1475
TYPE: PRT
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Best Local S
Matches 21
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
                                                                                                                                                                                                                                                                           PRIOR FILING DATE: 1: NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/
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                                                       cn 100.0%; Score 119; DB 9; 1 Similarity 100.0%; Pred. No. 1.8e-09; 21; Conservative 0; Mismatches of
1 ANDHLSILEAWSDNDTPYLHD 21
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ANDHLSILEAWSDNDTPYLHD 501

.09-740-274-4

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FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NOWEL GLUCOSYLTRANSFERASES
FILE REFERENCE: BO43388-CIP
CURRENT FILING DATE: 2001-11-29
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR PILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: PATENTIN Ver. 2.1
SEQ ID NO 10
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PRIOR FILING DATE: 1995-(
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PRIOR FILING DATE: 1998-1
PRIOR APPLICATION NUMBER:
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CURRENT FILING DATE: 2000-12-19
              Query Match
Best Local 9
Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: PRT ORGANISM: streptococcus mutans
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APPLICANT: DIJKHUIZEN, LUBBER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 1375
                                                                                  ORGANISM: Streptococcus mutans
                                                                                                                   ENGTH: 545
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APPLICATION NUMBER:
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RAHAOUI, HAI
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63.0%; Score 75; DB 10; Length 545; 71.4%; Pred. No. 0.0033; Live 1; Mismatches 5; Indels
                                                                                                                                                                                                                                                                                                                                                                          LUBBERT
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US-09-740-274-6
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                                                                                                                                          FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT EILING DATE: 2000-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR FILING DATE: 2000-05-25
NUMBER: 09 SEQ ID NOS: 19
NOMBER: 09 SEQ ID NOS: 19
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                                                 US-09-995-749A-11
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PRIOR APPLICATION NUMBER: 09/
PRIOR FILING DATE: 1998-01-16
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CURRENT FILING DATE: 2000-12-19
                                                                                                              SOFTWARE: PatentIn Ver. 2.1
SEQ_ID_NO_11
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PRIOR FILING DATE: 1998-01-20
PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/
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NUMBER OF SEQ ID NOS:
SOFTWARE: FastSEQ fo
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PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE OF INVENTION:
Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                      APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
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                                                                 TYPE: PRT ORGANISM: Leuconostoc mesenteroides
                                                                                              ENGTH: 522
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Pred. No. 0.
   Score 71;
Pred. No.
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FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILLING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILLING DATE: 2000-06-28
PRIOR PPLICATION NUMBER: BPO 00201871.1
PRIOR PILLING DATE: 2000-05-25
NUMBER OF SEO ID NOS: 19
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Best Local :
 Query Match 42.9%;
Best Local Similarity 47.1%;
Matches 8; Conservative 4
                                                                                                                                     SEQ ID NO 1
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                                                                                                                                                                   PRIOR APPLICATION NUMBER: PCT/AU00/00437
PRIOR FILING DATE: 2000-05-11
PRIOR APPLICATION NUMBER: US 60/133,973
PRIOR FILING DATE: 1999-05-13
NUMBER OF SEQ ID NOS: 13
                                                                                                                                                                                                                                                                                     TITLE OF INVENTION: LAWSONIA DERIVED GENE AND RELATED FLGE TITLE OF INVENTION: POLYPEPTIDES, PEPTIDES AND PROTEINS AVEILE REFERENCE: DAVILSO.001APC
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CURRENT FILING DATE: 2002-08-13
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                                                                                    LENGTH: 502
TYPE: PRT
ORGANISM: Lawsonia intracellularis
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LEER, ROBERT-JAN
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Ankenbauer, Robert G.
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Hasse, Detlef
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Pred. No. 0.72;
3; Mismatches
   Score 51; DB 12;
Pred. No. 14;
4; Mismatches 5
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SOFTWARE: PatentIn Ver. 2.1
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RESULT 8
US-09-815-242-14004
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APPLICANT: RAHOUI, HAKIM
APPLICANT: RAHOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
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SEQ ID NO 14004
LENGTH: 302
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CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
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                                                                                                                                                                                            APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION NUMBER: 60/207,727
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
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APPLICATION NUMBER: 60/242,578
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10; Conserv
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US20020061569A1
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Xu, H. Howard
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Trawick, John D.
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Zyskind, Judith W.
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Pred. No.
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CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver: 2.1
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Matches
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LENGTH: 535
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Patent No. US20020155568A1
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Patent No. US20020162137A1
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                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
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             APPLICANT: Lutziger, Isabelle
APPLICANT: Wen, Tsui-Jung
TITLE OF INVENTION: Materials and Methods for the Alteration of Enzyme and
TITLE OF INVENTION: Acetyl COA Levels in Plants
FILE REFERENCE: 201573
CURRENT APPLICATION NUMBER: US/09/344,882
CURRENT FILING DATE: 1999-06-25
PRIOR APPLICATION NUMBER: US 60/090,717
PRIOR FILING DATE: 1998-06-26
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APPLICANT:
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NUMBER OF SEQ ID NOS:
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                                                                                                                                                                                                                                                                                                                                         Application US/09344882
                                                                                                                                                        Johnson, Jerry L
Allred, Carolyn C
Fatland, Beth
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Behal, Robert
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; Pred. No. 1.2e
5; Mismatches
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Pred. No.
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; TYPE: PRT ; ORGANISM: Arabidopsis Thaliana US-09-344-882-24
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CURRENT APPLICATION NUMBER: US/10/293,865

CURRENT FILING DATE: 2002-11-13

PRIOR APPLICATION NUMBER: US 09/344,882

PRIOR FILING DATE: 1999-06-25

PRIOR FILING DATE: 1998-06-26

PRIOR FILING DATE: 1998-06-26

NUMBER OF SEQ ID NOS: 38

SOFTWARE: Patentin Ver. 3.1
                                                                                                                                                                                   RESULT 13
US-10-295-693-90
IS-10-295-693-90
; Sequence 90, Application US/10295693
; Publication No. US20030198976A1
; Publication No. US20030198976A1
; GENERAL IMPORMATION:
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; ORGANISM: Arabidopsis Thaliana
US-10-293-865-24
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Matches 9; Conserv
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Publication No. US20030106090A1
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LENGTH: 534
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Best Local 9
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APPLICANT: Wurtele, Eve S
APPLICANT: Bristol-Myers Squibb Company
TITLE OF INVENTION: NOVEL HUMAN G-PROTEIN COUPLED RECEPTOR, HGPRBMY14, RELATED TO THE
TITLE OF INVENTION: GPCR, GPR73
TITLE OF INVENTION: GPCR, GPR73
TITLE REFERENCE: D0118 CIP
CURRENT SPLICATION NUMBER: US/10/295,693
CURRENT FILING DATE: 2002-11-14
PRIOR APPLICATION NUMBER: US 60/266,525
PRIOR FILING DATE: 2002-02-05
PRIOR FILING DATE: 2002-02-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Wen, Tsui-Jung
TITLE OF INVENTION: Materials and Methods
TITLE OF INVENTION: Acetyl Coa Levels in
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nes 9; Conserv
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Oliver, David J
Behal, Robert
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Allred, Carolyn C
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Wen, Tsui-Jung
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52.9%;
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Pred. No. 53;
2; Mismatches
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RESULT 14
US-10-067-649-90
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; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Synthesized Random Peptide
US-10-295-693-90
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OTHER INFORMATION: Synthesized Random Peptide.
US-10-067-649-90
APPLICANT: NUMBER: GREGORY
APPLICANT: WHYTE, DAVID
APPLICANT: CARNEPEEL, SEAN
APPLICANT: CARNEPEEL, SEAN
APPLICANT: CARNEPEEL, SEAN
APPLICANT: MANNING, GERARD
APPLICANT: SUDARSANAM, SUCHA
TITLE OF INVENTION: NOVEL PROTEASES
FILE REFERENCE: 038602/1214
CURRENT APPLICATION NUMBER: US/09/888,615
CURRENT APPLICATION NUMBER: 60/214,047
PRIOR FILING DATE: 2000-06-26
PRIOR FILING DATE: 2000-06-26
NUMBER OF SEQ ID NOS: 150
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Publication No. US20030100057A1
GENERAL INFORMATION:
APPLICANT: Bristol-Myers Squibb Company
TITLE OF INVENTION: A NOVEL HUMAN G-PROTEIN COUPLED RECEPTOR, HGPRBMY14, RELATED TO
TITLE OF INVENTION: ORPHAN GPCR, GPR73
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Matches 8; Conserv
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LENGTH: 15
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SEQ ID NO 90
LENGTH: 15
TYPE: PRT
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Patent No. US20020064856A1
GENERAL INFORMATION:
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Best Local Similarity
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PRIOR FILING DATE: 2001-10-16
NUMBER OF SEQ ID NOS: 95
SOFTWARE: Patentin version 3.1
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CURRENT APPLICATION NUMBER: US/10/067,649
CURRENT FILING DATE: 2002-02-05
PRIOR APPLICATION NUMBER: US 60/266,525
PRIOR FILING DATE: 2001-02-05
PRIOR APPLICATION NUMBER: US 60/329,897
PRIOR FILING DATE: 2001-10-16
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Pred. No. 1.2;
3; Mismatches 2
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116
           1107863 seqs, 158726573 residues
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Listing first 45 summaries
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Compugen Ltd
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIE

100.0 1430 23 AAU98029 100.0 1430 23 AAU98041 100.0 1430 23 AAU98042 100.0 1430 23 AAU98043 100.0 1430 23 AAU98043	s. mutans glucosyl Alpha-D-glucosyltr Streptococcus muta S. mutans glucosyl	AAU98045 AAR91047 AAU79285 AAU798027	22123	1430 1577 1577 1017	100.0 100.0 77.6 64.7	116 90 75 75	∾∞ ⊿Φα
	S. mutans glucosyl	AAU98029 AAU98041 AAU98042 AAU98043 AAU98043	22222	1430 1430 1430 1430	100.0	116 116 116	42841

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49	49	49	49	49	49	49	49	50	50	50	51	53	53	53.5	59	60	63	64	66	66	99	68	74	75	75	75	75	75	75	75	75	75	75	75	75	
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704	623	623	531	470	418	12	12	522	474	473	429	12	12	1781	12	12	2835	2057	1375	1375	. 12	1527	1592	1476	1475	1475	1475	1475	1475	1475	1475	1475	1475	1475	1475	
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ABB50474	ABB50534	AAW88707	AAB92987	ABP66275	AAB93916	ABB98648	ABB98578	AAG42076	AAG42077	AAG42078	AAU38429	ABB98646	ABB98644	AAU74519	ABB98643	ABB98642	ABB98574	AABI0667	AAU79288	AAU98028	ABB98641	AAU80055	AAR32925	AAU79284	AAU98040	AAU98039	AAU98038	AAU98037	AAU98036	AAU98035	AAU98034	AAU98033	AAU98032	AAU98031	AAU98030	ı
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RESULT 1
AAU9802
XX AAU98
AC AAU9
XX AAU98
DT 27-A
DX S. n
DX S. n
XX Coat
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PR 07--
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PR 07--
PR 16--
PR 
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07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
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                                            (NICH/) NICHOLS S E
                                                                                                                                                                    98US-0210361.
95US-0478704.
95US-0482711.
95US-0482743.
95US-00485243.
98US-0007999.
98US-0008172.
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CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D567T, D571K,ND57TK,CC D567T,D571K,ND14T, I448V/D457N,D567T/D571K/NT04T,CC D567T/D571K/NT04T,And K779Q or a GTF D polypeptide having CC planges at positions from T589D, T589E, N471D,T589E, Also included are a glucan produced by the GTF mutant, CC polypuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC polypuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC polypuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the polypuclectide operably linked to a promoter, a vector comprising the polypuclectide operably linked to a promoter, a vector comprising the expression cassette, host cell promoter, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan in a plant transformed with a gene encoding a glucan in a plant. The method comprises transforming a glucan in a plant produce the glucan in the comprise plant cell under plant growing compositions to produce a regenerated plant and inducing expression of the comprising the glucan in a plant to produce the glucan in the vector is useful a comprise to produce a regenerated plant and inducing expression of the collymuclectide for a time sufficient to produce the glucan in the polymuclectide for a time sufficient to produce the glucan in the collymuclectide for a time sufficient to produce the glucan in the collymuclectide for a time sufficient to produce the glucan in the collymuclectide for a time sufficient to produce the glucan in the collymuclectide for a time sufficient to produce the glucan for the polymuclectide in the amyloplast of polymuclectide starch and latexes in paper mutant.

CC
RESULT 2
AAU98041
ID AAU9
XX
AC AAU5
XC
DT 27-P
XX
DE S. n
XX
KW Gluc
KW Gluc
KW Gluc
KW amyl
XX
XX
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disclosure; Page 38-42; 44pp; English
                                                               Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                             amyloplast;
                                                                                                                                                                                                                                                     AAU98041 standard; Protein; 1430
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                                                                                                                                glucosyltransferase
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                                                    manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Mismatches
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                                                                                                                                    mutant
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from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1430;
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11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
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                                                                                                                                                                                    WPI; 2002-414332/44
                                                                                                                                                                                                    (NICH/) NICHOLS
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98US-0008172.
98US-0009620.
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95US-0482711.
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                                                                                                                                                                                                                                                                 /note= "Wild-type Thr substituted by Asp'
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Glucosyltransferase B or D protein useful for producing a glus substitutes for and additions to modified starch and later paper manufacture, comprises mutations in specific positions a glucan useful latexes in

cc (GTF) Bollypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D567T, D57TK/KD14T, D457N/D57TK, D567T/D57TK, D567T, D567TK, D567TM, D5 Claim 36; Page -; 44pp; English. The invention an isolated protein comprising a glucosyltransferase on from I448V, D457N,

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RESULT 3
AAU9802
ID AAU9902
XX AAU990
XX AAU990
XX AAU990
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XX COAT
XX Gluc
XX Stre
XX INI

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The invention an isolated protein comprising a glucosyltransferase (GTE) B polypeptide having changes at position from I448V, D457N, CC D567T, K1014T, D457N/D571K, D567T,D571KK,K1014T, I448V/D457N/D571K, D567T/D571KK,K1014T, I448V/D457N/D567T/D571KK,T79Q/K1014T, CC P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CC Changes at positions from T589D, T599E, M471D/T589E, Also included are a glucan produced by the GTF mutant, CC P017T899E, Also included are a glucan produced by the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell CC vector, a seed or tuber from the transgenic plant comprising the controluced with the vector, a transgenic plant a paper sizing and/or coating composition comprising a glucan produced in a plant transformed country and the mutant GTF, wild type or, starch, a latex,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
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07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 36; Page -; 44pp; English.
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nilarity 100.0%;
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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Pred. No. 2.6e-09;
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thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line of deficient in starch biosynthesis, transformed with a gene encoding a glucosyltransferase B or D enzyme, wild-type or mutant and a paper of glucosyltransferase B or D enzyme, wild-type or mutant and a paper of comprising the glucan (paper sizing/coating agent): The vector is useful of plant cell with the vector, growing the plant cell under plant growing of the plant growing the plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transit sequence from the controphyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical efficients, paper condically produced input materials, is more cost-effective and convironmentally friendly. Moreover, glucans also exhibit thermoplastic correspondent and impart alons to the naner during coating step.
RESULT 4
AAU98043
AID AAU98
AC AAU9
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
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07-JUN-1995;
07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic
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                                                                                                                       16-JAN-1998;
16-JAN-1998;
                                 (NICH/)
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                                 NICHOLS
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98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Protein; 1430 AA
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                                                                                            -0009620
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Pred. No. 2.6e-09;
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CC (GTF) B polypeptide having changes at position from I448V, D457N, CC (GTF) B polypeptide having changes at position from I448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, CC D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, CC P169A/Y170A/Y171A, and K779Q or a GTF D D91/PPDY1GE having changes at positions from T589D, T589E, M471D, M471D/T589D, and CC COMPAND/T589D, Also included are a glucan produced by the GTF mutant, CC polynuclectide, a ribbonucleic acid sequence encoding the GTF mutant, CC polynuclectide, a ribbonucleic acid sequence encoding the GTF mutant, CC polynuclectide, a repersising the polynuclectide operably linked to a promoter, a vector comprising the expression cassette, host cell coating composition comprising the expression cassette, host cell coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the filter of the glucan in starch biosynthesis, transformed with a gene encoding a glucosynthesis, transformed with a gene encoding a glucosyltransferase B or D enzyme, wild-type or mutant and a paper comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the conditions biphosphate carboxylase small subunit, waxy, brittle-1 and clucan in the more than the produce of the produce of the plant and placen in the plant produce the plant and placen in the place
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XDT 27-A
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XX Gluc
KW Coat
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Matches 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and biologically friendly. Moreover, glucans also exhibit thermoplastic environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFD mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFD sequence appearing as AAU98029 and the information in claim 36.
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                             Glucosyltransferase; coating composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                        27-AUG-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                           1 AINHLSILEAWSDNDPQYNKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
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                                                                                                        glucosyltransferase GTFD mutant N471D/T589D.
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                                  GTPD; transgenic plant; paper sizing;
glucan; starch; latex; thermoplastic molecule;
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Pred. No. 2.6e-09;
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16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                             amyloplast; vacuole; paper manufacture; mutant; mutein
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                                                                                                                                                                                                                                                                                                     Streptococcus mutans
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                                                                                                                                                                                                                                                                                'note= "Wild-type Asn
                                                                                                                                                                                                                                                                        "Wild-type Thr
                                                                                                                                                                                                                                                                                 substituted
                                                                                                                                                                                                                                                                         substituted by Asp
                                                                                                                                                                                                                                                                                 Λq
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Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in manufacture, comprises mutations in specific positions

Claim 36; Page -; 44pp; English.

CC (GTP) Be polypeptide having changes at position from 1448V, D457N, CC D5677, K1014T, D457N,D567T,D571K,K709CK1014T, CD567T,D571K,K014T, L448V/D457T,D571K,K709CK1014T, CD567T/D571K,K1014T, L448V/D457T,D571K/K709CK1014T, CD567T/D571K/K709CK1014T, CD567T/D571K/K709CK1014T, CD567T/D571K/K709CK1014T, CD567T/D571K/K709CK1014T, CD567T/D571K/K709CK1014T, CD567T/D589E, Also included are a glucan produced by the GTF mutant, CC N471D/T589E, Also included are a glucan produced by the GTF mutant, CC N471D/T589E, Also included are a glucan produced by the GTF mutant, CC na expression cassette comprising the expression cassette, host cell promoter, a vector comprising the expression cassette, host cell promoter, a seed or tuber from the transgenic plant, a paper sizing and/or cell with a gene encoding the mutant GTF, wild type or, starch, a latex, with a gene encoding the mutant GTF, wild type or, starch, a latex, cell ficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in starch biosynthesis, transformed with a gene encoding a CC deficient in paper disting the glucan in the vector is useful growing growing the plant and inducing expression of the CC deficient operatory deficient to produce the glucan in the polyment of the vector is the paper disting to modified starch disting the glucan The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N,

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        was
and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Note:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S. mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27-AUG-2002 (first entry
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D571K, D457N/D57TK, D567T/D571K, D457N/D57TK, 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAU98045;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAU98045 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19-DEC-2000; 2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US2002031826-A1
                                                                                                                                                                                                                                                       paper manufacture, comprises mutations
                                                                                                                                                                                                                                                              Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                                                                                                           WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                                                        Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-JAN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                             (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  e: The present sequence is not
created by the indexer using t
the information in claim 36.
                                                                                                                                                                                                               36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AINHLSILEAWSDNDPQYNKD 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AINHLSILEAWSDNDPQYNKD 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1430
                                                                                                                                                                                                             Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98US-0210361.
95US-0478704.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               589
                                                                                                                                                                                                                                                                                                                                                                                                                               Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     note= "Wild-type Asn substituted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Protein; 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTPD; transgenic plant; paper sizing;
glucan; starch; latex; thermoplastic molecule;
paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Wild-type Thr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 116; DB 23;
Pred. No. 2.6e-09;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTFD mutant N471D/T589E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the GTFD sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                substituted by Glu"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in the specification but
                                                                                                                                                                                                                                                            in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 appearing as AAU98029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1430;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
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cc introduced with the vector, a transgenic plant, apaper sizing and/or vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising the with a gene encoding the mutant GTF, wild type or, starch, a latex, cy thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful conditions to produce a regenerated plant and inducing expression of the polymucleotide for a time sufficient to produce the glucan in the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Cc glucans are useful as substitutes for and additions to modified starch cc and latexes in paper manufacture. Unlike prior art techniques, which creating the glucan produced by GTF, which utilises to biologically produced input materials that produce chemical effluents, paper manufacture is not shown in the specification but cc properties and impart gloss to the paper during coating step.

CC The present sequence represents a GTFD mutant of the invention but was created by the indexer using the GTFD sequence appearing as AAU98029 and the information in claim 36.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   an expression cassette comprising the polynucleotide operably linked to promoter, a vector comprising the expression cassette, host cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                 Alpha-D-glucosyltransferase; primer-independent; soluble glucan; sucrose; transgenic plant; cloning; Escherichia coli;
                                                                                                                                                                                                                                                                                                                                                                            22-MAY-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                       AAR91047 standard; Protein; 1577
                                                                                                                                                                                                                                                                                                                                           Alpha-D-glucosyltransferase
                               (GIFF/)
(JACQ/)
(SIMP/)
                                                                                           24-AUG-1994;
                                                                                                                          24-AUG-1995;
                                                                                                                                                                                                                    Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 AINHLSILEAWSDNDPQYNXD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21;
                               GIFFARD P
JACQUES N
SIMPSON C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AINHLSILEAWSDNDPQYNKD 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1430 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                       salivarius strain
                                                                                                                            95WO-AU00527
                                                                                              94AU-0007643
                                  r > 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 116; DB 23;
Pred. No. 2.6e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21
                                                                                                                                                                                                                       ATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                  g; Escherichia coli;
pGSG501; plasmid pGSG502;
                                                                                                                                                                                                                                                                        carbohydrate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1430;
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Giffard PM,

Jacques

NA,

Simpson

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RESULT 8
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XX AND7
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XX ANT1
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Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The sequence represents an alpha-D-glucosyltransferase from streptococcus salivarius. The enzyme is primer-independent, and produces soluble glucan from sucrose. A gene encoding the enzyme may be cloned and expressed in Escherichia coli using a subclone of phage lambda-Cl3, e.g. plasmid pGSG501 or plasmid pGSG502. The DNA may also be expressed in a transgenic plant, to improve the level of stored carbohydrate in a pasture plant which normally contains low levels, or to prevent degradation of stored carbohydrate during plant senescence. Dextran may be isolated from the plant, for use as a food binder or pharmaceutical additive. Primer independence ensures that the enzyme will be functional in plants. The glucan is poorly degraded in plants but easily degraded by bacteria in the rumen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Plants
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           activity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAU79285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAU79285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Seguence
                              The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17566) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13-AUG-2002
                                                                                                                                    Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTP-B) of Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                 anti-caries; glucosyl
                                                                                                                                                                                                                                                                                                                                                                                                                                 Antibody;
                                                                                                             Claim
                                                                                                                                                                                                                                                             04-OCT-2000; 2000JP-0304889
                                                                                                                                                                                                                                                                                           04-OCT-2000; 2000JP-0304889
                                                                                                                                                                                                                                                                                                                         16-APR-2002
                                                                                                                                                                                                                                                                                                                                                       JP2002114709-A
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DB; AAT13139.
                                                                                                                                                                                                  2002-448101/48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4; Page 16-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           contg. new bacterial DNA encoding glucosyl transferase
ty - retain higher levels of stored carbohydrate(s) in
y digestible by ruminants
                                                                                                             4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AINHLSILEAWSDNDPQYNKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AIAHLSILEAWSYNDHQYNKD
                                                                                                           Page
                                                                                                                                                                                                                                                                                                                                                                                                                                 dental caries; water insoluble
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  livestock.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first
                                                                                                                                                                                                                                                                                                                                                                                     mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                               mutans monoclonal antibody-related protein #2
                                                                                                           17-19; 28pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Protein; 1017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                31pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        77.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                     transferase-B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score
Pred.
                      water insoluble
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           90; DB 17;
No. 4.1e-05;
                                                                                                                                                                                                                                                                                                                                                                                                                                   glucan
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1577;
                                                                                                                                                                                                                                                                                                                                                                                                                                    synthetase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                          in enzyme having
synthetase of glucosyl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in a form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                              of an
                                                                                                                                                            glucosyl
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       멍
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Best Local S
Matches 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This sequence represents a Streptococcus mutans monoclonal antibody-related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein.
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16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D57TK, D567T/D57TK, D57TK, D57T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coating composition;
amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAU98027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Disclosure; Page 21-25; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mutans glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABK52938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AINHLSILEAWSDNDPQYNKD 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ANDHLSILEAWSDNDTPYLHD 467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1017 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        95US-0478704.
95US-0482711.
95US-0485243.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98US-0007999
98US-0008172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98US-0210361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -Sn86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ശ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ы
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Protein; 1475 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          64.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   glucan; starch; la
paper manufacture.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTFB; transgenic plant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          <u>,,</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        antibody specifically inhibits water
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTFB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                75;
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            latex;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .0058
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; paper sizing;
thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1017;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         useful
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coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line the glucan is produced in the amyloplast and/or vacuole or a maize line

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cc deficient in starch biosynthesis, transformed with a gene encoding a cc glucosyltransferase B or D enzyme, wild-type or mutant and a paper cc glucosyltransferase B or D enzyme, wild-type or mutant and a paper cc comprising the glucan (paper sizing/coating agene). The vector is useful cf for producing a glucan in a plant. The method comprises transforming a cc plant cell with the vector, growing the plant cell under plant growing c plant cell with the vector, growing the plant and inducing expression of the conditions to produce a regenerated plant and inducing expression of the collymucleotide for a time sufficient to produce the glucan in the cc regenerated plant, where the vector contains a transit sequence from cr contains a transit sequence from cc conditions biphosphate carboxylase small submit, waxy, brittle-1 and cl is produced in the amyloplast of potato or the vacuole of sugar beet. CC Glucans are useful as substitutes for and additions to modified starch can dilatexes in paper manufacture. Unlike prior art techniques, which cr candifacture utilising the glucan produced by GTF, which utilises biologically produced input materials that produce chemical effluents, paper conjective and conjective and impart gloss to the paper during coating step.

The present sequence represents GTFB.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                  Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAU98030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAU98030 standard; Protein; 1475 AA
                                                                                                                                     11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                   19-DEC-2000;
                                                                                                                                                                                                                14-MAR-2002
                                                                                                                                                                                                                                              US2002031826-A1
                                                                                                                                                                                                                                                                                             Misc-difference 448
                                                                                                                                                                                                                                                                                                                                                      Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                               S. mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27-AUG-2002
                                                                                                        07-JUN-1995
                                                                                                                         07-JUN-1995;
                                 (NICH/)
                                                                             16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                481 ANDHLSILEAWSDNDTPYLHD 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 AINHLSILEAWSDNDPQYNKD 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                 NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                               glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1475 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                     2000US-0740274.
                                                                           98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
                                                               98US-0009620
                                 S
E
                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                           /note= "Wild-type Ile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64.7%;
71.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 75; DB 23;
Pred. No. 0.0092;
1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTFB
                                                                                                                                                                                                                                                                                                                                                                                                                                                 mutant I448V
                                                                                                                                                                                                                                                                               substituted by Val"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                        molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
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Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                           Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                 invention an isolated protein comprising
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WPI; 2002-414332/44

manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTPB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU9802 and the information in claim 36. a glucosyltransferase on from I448V, D457N, appearing as AAU98027

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Sequence
1475 AA;
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밁
                                        Matches
                                                 Query Match
Best Local
 481
                                        15;
                   1 AINHLSILEAWSDNDPQYNKD 21
                                                   Similarity
ANDHLSILEAWSDNDTPYLHD 501
                                         Conservative
                                                   64.78;
71.48;
                                          <u>,,</u>
                                                  Score 75; DB 23;
Pred. No. 0.0092;
                                           Mismatches
                                            <u>ن</u>
                                                              Length 1475;
                                             Indels
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RESULT 11
AAU98031
    Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                          S. mutans glucosyltransferase GTFB mutant D457N
                                                                                                                                                    AAU98031 standard; Protein; 1475 AA
                                                                                           27-AUG-2002
                                                                                                                         AAU98031;
                                                                                           (first entry)
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CC USBOT, NUTSI, USBOT, USBOT,
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16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   as substitutes for paper manufacture,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      07-JUN-1995;
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07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14-MAR-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus Synthetic.
                                                                                                                                                                                                                           regenerated plant, where the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic environmentally friendly. Moreover, glucans also exhibit thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 36; Page -; 44pp; English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (GTF) B polypeptide having changes at position from D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (NICH/)
properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification by was created by the indexer using the GTFB sequence appearing as and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       invention an isolated protein comprising a glucosyltransferase F) B polypeptide having changes at position from I448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2002-414332/44
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98US-0008172.
98US-0009620.
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95US-0478704.
95US-0482711.
95US-0485243.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ß
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   e B or D protein useful for producing a glu
and additions to modified starch and lates
comprises mutations in specific positions
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                                                               appearing as AAU98027
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latexes in
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RESULT 12
AAU98032
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                       The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D567T,D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, M1014T, I448V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T, D48V/D457N/D567T,D571K/K719Q/K1014T, D48V/D457N/D567T, D48V/D48V/D457N/D567T, D48V/D457N/D567T, D48V/D47N/D567T, D48V/D457N/D567T, D48V/D467N/D567T, D48V/D467N/D567T, D48V/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467N/D467
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07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAU98032 standard; Protein; 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S. mutans glucosyltransferase GTFB mutant D567T
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase;
                                                                                                                                                                                                                                                                                                         Claim
                                                                                                                                                                                                                                                                                                                                                Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19-DEC-2000;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (NICH/)
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L6-JAN-1998;
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                                                                                                                                                                                                                                                                                                         36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANDHISILEAWSDNDTPYLHD 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AINHLSILEAWSDNDPQYNKD
                   a seed or tuber from the transgenic plant,
    composition comprising a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1475
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            vacuole;
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "Wild-type Asp substituted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          64.7%;
71.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 75;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
    glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 23;
0.0092;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
      a paper sizing and/or
a plant transformed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                an useful
s in
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gene encoding the mutant GTF, wild type or, starch,

a latex,

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RESULT 13
AAU98033
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   thermoplastic conclude or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line of glucan is produced in the amyloplast and/or vacuole or a maize line of glucan is produced in the amyloplast or glucan and a paper of glucosyltransferase B or D enzyme, wild-type or mutant and a paper of producing a glucan in a plant. The method comprises transforming a complication to growing in a plant. The method comprises transforming a complitions to produce a regenerated plant and inducing expression of the plymucleotide for a time sufficient to produce the glucan in the cripulose biphosphate carboxylase small subunit, waxy, brittle-1 and conforming a produced in the amyloplast of potato or the vacuole of sugar beet. Claucans are useful as substitutes for and additions to modified starch cardial produce dimplementally friendly. Moreover, glucans afficed starch conforming the glucan produced by GTF, which utilises converses and impart gloss to the paper during coating step.

Claucan produced by the indexer using the GTFB mutant of the invention but the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
Matches 15; Conserv
                          07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                   Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                            Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                             S. mutans glucosyltransferase GTFB mutant K1014T.
                                                                                                                                                                                                                                                                                                                                                                                                                             27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAU98033 standard; Protein; 1475 AA.
                                                                                                  11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                            14-MAR-2002
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                                                                                                                                             19-DEC-2000; 2000US-0740274
(NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481 ANDHLSILEAWSDNDTPYLHD 501
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
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                          98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                     /note= "Wild-type Lys substituted by Thr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64.7%;
71.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 75; DB 23;
Pred. No. 0.0092;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 1475;
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CE (GTF) B polypeptide having changes at position from 1448V, D457W, CC D567T), K1014T, D457W/D567T, D457W/D57TK, CC D567T)D57TKK, D457W/D567T, D567T/D57TKK, CC D567T)D57TKK, D457W/D457TK, D567T/D57TKK, CC D567T)D57TKK, D457W/D47TA, and K779Q or a GTF D polypeptide having changes at positions from T899D, T899E, M47LD, M47LD/T899E, Also included are a glucan produced by the GTF mutant, CC an isolated polymuclectide which encodes P1 or P2, or its complementary CC polymuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polymuclectide operably linked to a cyromoter, a vector comprising the synthesis or cassette, host cell CC introduced with the vector, a transgenic plant, a paper sixing and/or vector, a seed or tuber from the transgenic plant, a paper sixing and/or coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition to make the myloplast and/or vacuole or a make line glucan is produced in the amyloplast and/or vacuole or a make line cell under plant a gene encoding a glucan produced with a gene encoding a plucan produced with a gene encoding a plucan produced with a gene encoding a glucan produced with a gene encoding a glucan producing a glucan in a plant. The method comprises transforming a glucapital of the polymuclectide for a time sufficient to produce the glucan in the cell under plant growing the plant and inducing expression of the comprising the plant, where the vector contains a transit sequence from regenerated plant, where the vector contains a transit sequence from contains a crusit sequence from the paper manifacture. Unlike prior art techniques, which ce is produced in paper manifacture. Unlike prior art techniques, which creditions to produced in paper manifacture. Unlike prior art techniques, which creditions to produced in paper manifacture. Unlike prior and centi
Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          paper manufacture, comprises mutations in
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RESULT 14
AAU98034
ID AAU98
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AAU98
XX
AC AAU98
XX
DT 27-AU
XX
DE S. mu
XX
KW Glucc Š 밁 Query Match Best Local : Matches S. mutans glucosyltransferase GTFB mutant D457N/D567T 27-AUG-2002 AAU98034 standard; Protein; 1475 AA 1 AINHLSILEAWSDNDPQYNKD 21 Similarity ANDHISILEAWSDNDTPYLHD 501 Conservative (first entry) 64.7%; 71.4%; Score 75; DB 23; Pred. No. 0.0092; Mismatches DB 23; ω .. Length 1475; 0 Gaps

Glucosyltransferase; GTFB; transgenic

plant; paper sizing

Sequence

1475 AA;

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CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D57TR, D457N/D57TR, D567T/D57TR, D567TP, D567TP, D567TP, D66TTP, D66TTP, D67TP, D67
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07-JUN-1995;
07-JUN-1995;
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16-JAN-1998;
20-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2002-414332/44
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98US-0008172.
98US-0009620.
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95US-0478704.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having thanges at positions from T589D, T589E, N471D, N471D/T589D, and N471D/T589E, Also included are a glucan produced by the GTF mutant, N471D/T589E, Also included are a glucan produced by the GTF mutant an isolated polynucleotide which encodes Pl or P2, or its complement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14-MAR-2002
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20-JAN-1998;
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                                                                                                                                                                                                                    Claim 36; Page -; 44pp; English
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95US-0482711.
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71.4%;
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cc polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, can expression cassette comprising the polynucleotide operably linked to a component of the control of the control
Sequence
                                                                                                                           and the information in claim 36.
1475 AA;
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Matches Query Match Best Local Similarity 15; Conservative 64.7%; 71.4%; Score 75; DB 23; Length 14
Pred. No. 0.0092;
1; Mismatches 5; Indels Length 1475; 0; Gaps

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RESULT 2 T30858 glucosyltransferase - Streptococcus salivarius C,Species: Streptococcus salivarius C,Species: Streptococcus salivarius C,Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999 C,Accession: T30858 R,Simpson, C.L.; Giffard, P.M.; Jacques, N.A. Infect. Immun. 63, 609-621, 1995 A,Title: Streptococcus salivarius ATCC 25975 possesses at least two genes coding for A;Reference number: Z20909; MUID:95122197; PMID:7822030 A,Accession: T30858 A,Scatus: preliminary; translated from GB/EMBL/DDBU A;Residues: 1-1577 <sim> A;Coss-references: EMBL:L35928; NID:g662380; PID:g662381; PIDN:AAC41413.1 C;Genetics:</sim>	Query Match 100.0%; Score 116; DB 2; Length 1431; Best Local Similarity 100.0%; Pred. No. 2.2e-09; Matches 21; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Qy 1 AINHLSILEAWSDNDPQYNKD 21 Db 495 AINHLSILEAWSDNDPQYNKD 515	A; Molecule type: DNA A; Residues: 1-1431 < HON> A; Residues: 1-1431 < HON> A; Residues: 1-1431 < HON> A; Cross references: GB: M29296 A; Cross references: GB: M29296 C; Superfamily: cpl repeat homology < CP1> F; 1127-1146/Domain: cpl repeat homology < CP2> F; 1127-1146/Domain: cpl repeat homology < CP3> F; 1127-1276/Domain: cpl repeat homology < CP3> F; 1257-1276/Domain: cpl repeat homology < CP4> F; 1277-1297/Domain: cpl repeat homology < CP5> F; 1312-1340/Domain: cpl repeat homology < CP8> F; 1341-1361/Domain: cpl repeat homology < CP8> F; 1341-1361/Domain: cpl repeat homology < CP6> F; 1385-1404/Domain: cpl repeat homology < CP7>	sor - Streptococcus mutans sion 30-Sep-1993 #text_change 07-May-1999 I.K. 1990 streptococcus mutans gtfD gene encoding the 1100958; PMID:2148600	30 45 38.8 440 2 C84265 31 45 38.8 504 2 S51942 prunin 2 precursor 32 45 38.8 637 2 T00548 hypothetical prote 33 45 38.8 644 2 A97268 methionyl-tRNA syn 34 45 38.8 644 2 A97268 35 45 38.8 1475 2 T29809 hypothetical prote 36 45 38.8 2358 2 T39569 probable alpha-glu 37 45 38.8 2371 2 T43432 alpha-glucan synth 38 44.5 38.4 236 2 S54428 fimbrial protein h 40 44.5 38.4 236 2 S54428 fimbrial protein h 41 42 44 37.9 291 2 AB3235 45 47 37.9 335 2 C85642 hypothetical prote 46 47 37.9 335 2 F90781
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glucosyltransferase (EC 2.4.1.-) gtfS precursor - S C;Species: Streptococcus sobrinus (C;Date: 30-Uun-1992 #sequence_revision 30-Uun-1992 C;Accession: A41483 R;Gilmore, K.S.; Russell, R.B.B.; Ferretti, J.J. Infect. Immun. 58, 2452-2458, 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 4
T30552
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A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030 A;Accession: T30857
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                                                                                                                                                                                                                                                                                                                A;Cross-references: EMBL:AF049609; NID:g2935545; PID:g2935546; PIDN:AAC05156.1
C;Genetics:
A;Gene: gtfN
                                                                                                                                                                                                                                                                                                                                                                                                              submitted to the EMBL Data Library, February 1998 A;Description: Streptococcus salivarius V1477 gtfl A;Reference number: Z20854 A;Accession: T30552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                glucosyltransferase N - Streptococcus salivarius (fragment) C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_chC;Accession: T30552

R;Jaffe, R.I.
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A; Title: Analysis of the Streptococcus
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No.
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0.00013;
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                                                                                                   Streptococcus sobrinus
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                                                                #text_change 15-Oct-1999
                                                                                                                                                                                                                                                                                    Length 1449
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A;Reference number: A41483; MUID:90316665; PMID:2142479
A;Accession: A41483
A;Molecule type: DNA
A;Residues: 1-1365 <GIL>
A;Cross-references: GB:M30943; NID:g153652; PIDN:AAA268:
C;Genetics:
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A;Title: Cloning and sequencing of gene coding for an eA;Reference number: Z20981; MUID:98164374; PMID:9503626
A;Accession: T31098
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C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; h
A;Reference number: A33128
A;Accession: A33128
A;Status: preliminary; not compared with conceptual translation
A;Molecule type: DNA
A;Residues: 1-171,173-641,'N',643-1475 <SH2>
A;Experimental source: strain GS-5
                                                                                                                                                                                                                             A;Status: preliminary
A;Molecule type: DNA
A;Molecule type: DNA
A;Residues: 1-1475 <SHI>
A;Cross-references: GB:MI7361; NID:g153639;
A;Cross-references: GB:MI7361; NID:g153639;
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
submitted to the Protein Sequence Database,
                                                                                                                                                                                                                                                                                                                                                                                                                                                      R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene from Streptococcus A;Reference number: A33135; MUID:87308013; PMID:3040685
A;Accession: B33135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gtfB protein precursor - Streptococcus mutans (;Species: Streptococcus mutans (;Species: Streptococcus mutans C;Decies: 23-Oct1990 #sequence revision 23-Oct-1990 #text_change 15-Oct-1999 C;Date: 23-Oct1990 #sequence revision 23-Oct-1990 #text_change 15-Oct-1999 C;Date: 23-Oct1900 #sequence revision 23-Oct-1990 #text_change 15-Oct-1999 C;Date: 23-Oct1900 #sequence revision 23-Oct-1990 #text_change 15-Oct-1999 C;Date: 23-Oct1900 #sequence revision 23-Oct-1990 #sequence revision 24-Oct-1990 #se
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Experimental source:
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A; Residues: 1-1508 < MON>
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C;Date: 22-Oct-1999 #sequence_revision
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Gene: dsrB
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16; Conserv
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milarity 76.2%;
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71.4%;
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Pred. No.
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Pred. No. 0.0005;
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B-1299
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                                                                                                                                                                                                                                                                                                                      PIDN:AAA88588.1;
                                                                                                                                                                                                                                         September
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C;Superfamily: cpl repeat homology F;1093-1112/Domain: cpl repeat he F;1222-1241/Domain: cpl repeat he F;1287-1306/Domain: cpl repeat he F;1287-1316/Domain: cpl repeat he F;1330-1351/Domain: cpl repeat he F;1352-1371/Domain: cpl repeat he F;1402-1420/Domain: cpl repeat he F;1465-1484/Domain: cpl repeat he F;14513-1532/Domain: cpl repeat he F;14513-1532/Domain: cpl repeat he F;1513-1532/Domain: cpl repeat he F;1
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F;1096-1115/Domain: cpl r
F;1224-1243/Domain: cpl r
F;1289-1308/Domain: cpl r
F;1289-1308/Domain: cpl r
F;1354-1373/Domain: cpl r
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A;Title: Peptide sequences for sucrose splitting and glucan binding within Streptococcus A;Reference number: A38175; MUID:91123227; PMID:1704006
A;Creston: A38175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     glucosyltransferase (EC 2.4.1.-) I - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 31-Dec-1993 #sequence revision 31-Dec-1993 #text_chang C;Accession: A44811: $22776.
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A; Residues: 1-1592 < ABO >
A; Cross-references: GB: D90213;
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                                                                                            A; Gene: gtfJ
C;Superfamily: cpl repeat homology
C; Keywords: glycosyltransferase; h
F;1307-1326/Domain: cpl repeat hom
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A;Residues: 1-1518 <GIF>
A;Residues: 1-1518 <GIF>
A;Cross-references: EMBL.Z11873; NID:947526; PIDN:CAA77900.1; PID:947527
A;Note: sequence extracted from NCBI backbone (NCBIN:81050, NCBIP:81052)
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;Date: 28-Aug-1992 #sequence_revision 28-Aug-1992 #text_change 15-Oct-1999
                                                                                                                                                                                                                      Genetics
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71.4%;
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Pred. No. 0.00
1; Mismatches
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Pred. No. 0.007;
   Score 68;
Pred. No.
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   DB 2;
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RESULT 10
S22737
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A;Title: Molecular characterization of a cluster of at least A;Reference number: A44811; MUID:92148377; PMID:1838391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         glucosyltransferase (EC 2.4.1.-) S - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 16-Sep-1992 #sequence_revision 16-Sep-1992 #text_chang C;Accession: S22737; S28810; B44811; S22727
                                                                                                                                                                        R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene
A;Reference number: A33135; MUID:87308013; P
A;Accession: C33135
                                                                                                                                                                                                                                                                                                                              A;Title: Sequence analysis of the gtfC gene from Streptococcus A;Reference number: JT0345; MUID:89137980; PMID:2976010 A;Accession: JT0345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      dextransucrase (EC 2.4.1.5) precursor - Streptococcus mutans N;Alternate names: sucrose 6-glucosyltransferase C;Species: Streptococcus mutans
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A; Residues: 1-1375 < UED >
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C;Accession: JT0345; C33135
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F;1456-1475/Domain: cpl repeat homology
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C.Superfamily: cpl repeat homology
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A; Residues: 1-51 <GIF>
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A;Cross-references: EMBL:Z11872; NID:g47530; PIDN:CAA77898.1;
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A; Accession: S22737
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                                                                                                                                                                                                                                                                           A; Experimental source: GS-5
                                       A; Gene: gtf:
C; Function:
                                                                                                                     A; Molecule type: DNA
A; Residues: 1-349 <SHI>
A; Description:
C; Superfamily:
                                                                                                A;Cross-references: GB:M17361
                                                                                                                                                        A; Status: preliminary
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Pred. No. 0.084;
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                        of both water-soluble
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PMID:3040685
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C;Keywords: duplication; glycosyltransferase; hexosyltransferase F;1-34/Domain: signal sequence #status predicted <SIG> F;35-1375/Product: glucosytransferase #status predicted <MAT> F;1126-1145/Domain: cpl repeat homology <CP1> F;1253-1272/Domain: cpl repeat homology <CP2> F;1318-1337/Domain: cpl repeat homology <CP3>
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A;Accession: AH0630
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Nature 413, 848-852, 2001
A;Authors: Parry, C.; Quail, M.; Rutherford, K.; Simmonds, M.;
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                                                                                                                                                                                                                                                          submitted to the Protein S. A; Reference number: Z23029 A; Accession: T46504
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A; Residues: 1-429 < PAR>
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                                                                                                                                                                                                                                                                                                             R; Poustka, A.;
                                                                                                                                                                                                                                                                                                                                                             hypothetical protein DKFZp434M179.1 - human (fragment) C;Species: Homo sapiens (man)
                                                                                                                                        A; Note:
                                                                                                                                                                          A; Experimental source:
                                                                                                                                                                                                      A; Molecule type: mRNA
A; Residues: 1-632 < AAA>
                                                                                                                                                                                                                                          A;Status: preliminary
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Best Local
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Best Local
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Experimental source: adult test
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     IMVLAGASEFDPQYNKD
                                                                                                                                                                                                                                                                                                Klein, M.; Mewes, H.W.; Gassenhuber, J.; Wiemann, he Protein Sequence Database, January 2000
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52.9%;
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Pred. No.
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C;Accession: Cubaudary C;Fraser, C.J.; Federspiel, N.A.; Nauthors: A;Theologis, A.; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Nauthors: Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Creasy, T. ansen, N.F.; Hughes, B.; Huizar, L.

Nature 408, 816-820, 2000

A;Authors: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaylauthors: Huiter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaylauthors: Huiter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaylauthors, H.; Li, Y.; Lin, X.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maiti Rizzo, M.; Rooney, T.; Rowley, D.; Sakano, H.

A;Authors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Siker, M.; Wu, D.; Yu, G.; Fraser, C.M.; Venter, J.C.; Davis, R.W.

A;Title: Sequence and analysis of chromosome 1 of the plant Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      R;Kaneko, T.; Nakamuka, A., Sugimoto, M.; Takazawa, A., ---
Nakazaki, N.; Shimpo, S.; Sugimoto, M.; Takazawa, A., ---
Nakazaki, N.; Shimpo, S.; Sugimoto, M.; Takazawa, A., ---
DNA, Res. 8, 205-213, 2001
DNA, Res. 8, 205-213, 2001
A;Title: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium Ana
A;Title: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium Ana
A;Title: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium Ana
A;Title: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium Ana
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A;Molecule type: DNA
A;Residues: 1-369 <KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       hypothetical protein [imported] - Arabidopsis thaliana C;Species: Arabidopsis thaliana (mouse-ear cress) C;Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 31-Mar-2001 C;Accession: C86205
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A; Residues: 1-175 < Si
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nes 6; Conserv
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  108 LNHQEVIDAWSDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
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s: GB:AE005172;
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Pred. No. 16;
3; Mismatches
                                                                                                                                                                                                                                                              NID:g8954041; PIDN:AAF82215.1;
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Pred. No.
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                                                                                                           Mismatches
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Takazawa, M.; Yamada, M.; Yasuda, M.;
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Search completed: November Job time: 14.0379 secs

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Result
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Maximum Match 100%
Listing first 45 summaries
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Perfect score:
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  Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
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  seq length: 0
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Gapop 10.0 , Gapext 0.5
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116
1 AINHLSILEAWSDNDPQYNKD
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130.561 Million cell updates/sec
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MCKD_SCHPO
MFB1 HABIN
HFB2 HABIN
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PYRH_SULTO
SILF MOUSE
ROD1_YEAST
IL4R_HUMAN
COML_NEIGO
COML_NEIGA
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HPAG_SALDUU
SC63_HUMAN
SC63_MOUSE
VS12_REOVU
VS12_REOVU
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VS12_REOVU
BPEB_HUMAN
PMG2_ARATH
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RT "Nucleotide sequence of the Streptococcus mutans gtfD RT the glucosyltransferase-S enzyme."; RL J. Gen. Microbiol. 136:2099-2105(1990). RN [2] RN [2] RN SEQUENCE FROM N.A. STRAIN=MY14239 / Serotype C, MT4245 / Serotype C; RC MT4467 / Serotype E, and MT8148 / Serotype C; RC MT4467 / Serotype E, and MT8148 / Serotype C; RX MEDLINE=98231643; PubMed=9570124; RA Fujiwara T., Terao Y., Hoshino T., Kawabata S., Ooshi Kimura S., Hamada S.; RT "Molecular analyses of glucosyltransferase genes amon streptococcus mutans."; RT FEMS Microbiol. Lett. 161:331-336(1998). RN [3] SEQUENCE FROM N.A. STRAIN=UA159 / ATCC 700610 / Serotype C; RX MEDLINE=2229563; PubMed=12397186; RX MEDLINES DENTAL CARIES. C-1- CATALYTIC ACTIVITY: Succrose + {(1,6)-alpha-D-glucosyl)(N+1). CC -1- SUBCELLULAR LOCATION: Secreted1- DISEASE: DENTAL CARIES. CC -1- DISEASE: DENTAL CARIES. CC -1- DISEASE: DENTAL CARIES. CC -1- SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOM BINDING PROTEIN FROM S.MUTANS.	36.2 36.2 36.2 36.2 36.2 35.8 35.8 35.8 35.8 35.8 35.8 35.8 35.8
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SIMILARITY: Contains 6 cell wall binding repeats.

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use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for commentities requires a license agreement (See http://www.isb-sib.ch/anmor send an email to license@isb-sib.ch).
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D88656; BAA26117.1; -.
J D88659; BAA26117.1; -.
J D88662; BAA26115.1; -.
J D89979; BAA26121.1; -.
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                 KKKYIQ -> EKEYTL (IN STRAIN MT423).

A -> S (IN STRAIN MT4239).

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T -> A (IN STRAINS GS-5, MT4239)

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D -> Y (IN STRAINS MT4251).

E -> K (IN STRAINS MT4245).

G -> R (IN STRAIN MT4245).

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P29336;
P1-DBC-1992 (Rel. 24, Created)
O1-DBC-1992 (Rel. 24, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Glucosyltransferase-S precursor (EC 2.4.1.5)
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MEDLINE=90316665; PubMed=2142479;
Gilmore K.S., Russell R.R., Ferre
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InterPro; IPR002479; CW binding.
InterPro; IPR002318; Glyco_hydro_70.
Pfam; PF01473; CW binding_1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
Transferase; Glycosyltransferase; Signal;
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R -> K (IN STRAIN MT4467).
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OR 37 (POTENTIAL).
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C (APPROXIMATE).
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GTPB STRMU STANDARD; PRT
P089$7; 069381; 069384; 069387; 0
01-NOV-1988 (Rel. 09, Created)
28-FEB-2003 (Rel. 41, Last sequen
15-SEP-2003 (Rel. 42, Last annota
Glucosyltransferase-I precursor (
(Sucrose 6-glucosyltransferase)
GTPB OR SMU.1004.
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MT4467 / Serotype E, and MT9148 /
MEDLINE=98231643; pubmed=9570124;
Fujiwara T., Terao Y, Hoshino T.,
Kimura S., Hamada S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                           "Molecular analyses of glucosyltransferase Streptococcus mutans."; FEMS Microbiol. Lett. 161:331-336(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A. STRAIN=MT4239 / Se
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Shiroza T., Ueda S., Kuramitsu H.K., "Sequence analysis of the gtfB gene J. Bacteriol. 169:4263-4270(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=87308013;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=GS-5
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                                                                        AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISBASE: DENTAL CARIES.

MISCELLANFORD: CARIES.
 WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE) FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES EINDING PROTEIN FROM S.MUTANS.
                                                                                                                                                      C. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002).
FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT
TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE
OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
                                       MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES BY WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BY
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069381; 069384; 069387; 069390; 069396;
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2003 (Rel. 41 T---
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use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch). This SWISS-PROT entry is copyright. It is produced through a collabora between the Swiss Institute of Bioinformatics and the EMBL outstati the European Bioinformatics Institute. There are no restrictions on use by non-profit institutions as long as its content is in no SIMILARITY: Contains 10 cell wall binding repeats. gh a collaboration -

EMBL; M17361; AAA88588 1; -EMBL; D88651; BAA26101.1; -EMBL; D88654; BAA26109.1; -EMBL; D88657; BAA26119.1; -EMBL; D88657; BAA26113.1; -EMBL; D88997; BAA26113.1; -EMBL; AE014940; AAN58705.1; --InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 1.
Pfam; PF02324; Glyco_hydro_70; 1. Transferase; GlycosyItransferase; Signal; Repeat; Dental caries; 1210 1275 1340 34 1476 1051 1476 1130 1470 1329 139**4** 1086 1158 1163 1168 1182 1182 1234 1263 1263 1272 399 474 512 519 701 708 938 957 168 168 276 970 964 9 6 S -> T (IN STRAIN MT4239).

T -> I (IN STRAIN GS-5).

V -> A (IN STRAIN GS-5), MT4245, MT44467 AND MT8148).

Q -> P (IN STRAIN MT4251).
I -> S (IN STRAIN MT4251).
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S -> F (IN STRAIN MT4251).
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I -> T (IN STRAIN MT8148).
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T -> Y (IN STRAIN MT8148). F -> L (IN | FGKPVE -> Y | AND MT4467) | SV -> NT (II | MT4467) | ADS -> VDG H -> Y (IN Y -> H (IN AND MT8148) AND MT8148) S -> G (IN AND MT8148) POTENTIAL.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P27470;
01-AUG-1992
01-AUG-1992
15-SEP-2003
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GTF2_S
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SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-AUG-1992 (Rel. 23, Created)
01-AUG-1992 (Rel. 23, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
(Sucrose 6-glucosyltransferase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARIANT
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                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN=6715 / Serotype G;
MEDLINE=91123227; PubMed=1704006;
Abo H., Matsumura T., Kodama T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus downei (Streptococcus sobrinus).
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                      InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 13.
Pfam; PF02324; Glyco_hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental SIGNAL 1 38 POTENTIAL.
CHAIN 39 1592 GLUCOSYLTRANSFERASE-I.
                                                                                                                                                                                         EMBL; D90213; BAA14241.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  - -
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Streptococcus sobrinus glucosyltransferase (water-insoluble
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Peptide sequences for sucrose
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Kagawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacteriol 173:989-996(1991)

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOU
TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE E
OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE TH
AGGREGATION OF BACTERIAL CELLS AND FEBRIS.

CATALYTIC ACTIVITY: SUGTOSE + {(1,6)-alpha-D-glucosyl}(N) =
fructose + {(1,6)-alpha-D-glucosyl}(N+1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                          DISEASE: DEMTAL CARIES.

MISCELLANBOUS: GIF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA MISCELLANBOUS: GIF-I SYNTHESIZES T., 3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES EFORMS OF GLUCANS.

SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCANBINDING PROTEIN FROM S.MUTANS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fructose + {(1,6)-alpha-D-glucosyi}(N+1).
SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                     SIMILARITY: Contains 16 cell wall binding repeats.
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71.4%;
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L; Mismatches
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ltransferase (water-insoluble glucan
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MT8148)
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(IN REF. 1).
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Best Local
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J. Bacteriol. 169:4271-4278 (1987).

I. PUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE TE PUNCTION: PRODUCTION OF EXPELOPMENT OF THE DENTAL PLAQUI OF THEIR ABILITY TO ADHERE TO SMOOTH SUFFACES AND MEDIATE AGGREGATION OF BACTERIAL CELLS AND FOOD DEERIS.

I. CATALYTIC ACTUVITY: Sucrose + {(1,6)-alpha-D-glucosyl} (N)

fructose + ((1,6)-alpha-D-glucosyl} (N+1).

I. SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-JUL-1989 (Rel. 11, Created)
01-JUL-1989 (Rel. 11, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro:
Pfam; PP01473; CW_binding_I; 16.
Pfam; PP02324; Glyco hydro 70; 1.
Transferase; Glycosyltransferase;
                                                                                     modified and this statement is not re-
entities requires a license agreement
or send an email to license@isb-sib.c
                                                                                                           the European Bioinformatics Institute. There are no rest
use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by ar
                                                                                                                                                                                        FORMS OF GLUCANS.

- I- SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.

- I- SIMILARITY: Contains 19 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=87308014; PubMed=3040686;
Ferretti J.J., Gilpin M.L., Russell R.R.B.;
Ferretti B.J., Gilpin M.L., Russell R.R.B.;
Funucleotide sequence of a glucosyltransferase
sobrinus MFe28.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN-MFE28:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus
                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                              EMBL; M17391; AAC63063.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (Sucrose 6-glucosyltransferase)
                                                                                                                                                                                                                                          MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (AL
1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES
WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZE
                                                                                                                                                                                                                                                                                DISEASE: DENTAL CARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TaxID=1317;
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                                    hydro_70
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Pred. No.
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GLUCAN-BINDING (APPROXIMATE).
6.5 X TANDEM REPEATS.
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                                                                                         .ch).
                                                                                                     (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcaceae;
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RESULT 6
GTTC STRMU STANDARD; PRT; 1455 AA.

ID GTTC STRMU STANDARD; PRT; 1455 AA.

AC P13470; 063382; 063385; 063386; 063391; 063397; P054;
D1 01-NOV-1988 (Rel. 09, Created)
D1 28-FEB-2003 (Rel. 41, Last sequence update)
D2 28-FEB-2003 (Rel. 42, Last annotation update)
D3 15-SEP-2003 (Rel. 42, Last annotation update)
D4 Glucosyltransferase-SI precursor (EC 2.4.1.5) (GTF-S)
D5 (Ducosyltransferase) (Sucrose 6-Glucosyltransferase).

C8 Streptococcus mutans.
C9 Streptococcus mutans.
C0 Streptococcus mutans.
C1 STRAIN-309;
RN SEQUENCE FROM N.A.
RC STRAIN-89137980; PubMed=2976010;
RX MEDILINE-89137980; PubMed=3976010;
RX MEDILINE-89137980; PubMed=3976010;
RX MEDILINE-89137980; PubMed=3970124;
RX MEDILINE-89231643; PubMed=5970124;
RX MEDILINE-8231643; PubMed=3970124;
RX MEDILINE-8231643; PubMed=3970124;
RX MEDILINE-8231643; PubMed=397186;
RX MEDILINE-8231643; PubMed=397186;
RX MEDILINE-82308013; PubMed=10397186;
RX MEDILINE-87308013; PubMed=10397186;
RX MEDILINE-87308013; PubMed=3040685;
RX MEDILINE-87308013; PubMed
                                                                                                                                                                                                                                                                                                                        MEDIINE=22295063; PubMed=12397186; Ajdic D., McShan W.M., McLaughlin R.B., Savic G., Chang J., Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti "Genome sequence of Streptococcus mutans UA159, a cariogenic of the complex of the control o
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A REPEAT (INCOMPLETE).

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Pred. No. 0.00
2; Mismatches
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GLUCAN-BINDING (APPROXIMATE)
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-I- CATALYTIC ACTIVITY: SUCCESE + {(1,6) -alpha-D-glucosyl}{N} = D-fructose + {(1,6) 
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EMBL, M17361; AAA88589.1; -.
EMBL, M17361; AAA88589.1; -.
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW_binding_1; 1.
Pfam; PF02324; Glyco hydro 70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental
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2.4 A, 1 C AND 1 AC REPEATS.
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Enterobacteriaceae; Salmor
                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                     STRAIN=2229;
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                                                                                       use by non-profit institutions as long modified and this statement is not removed.
SEQUENCE
                        Multifunctional enzyme.
                               Aromatic
                                       InterPro; IPR002529; FAA hydro
Pfam; PF01557; FAA hydrolase;
                                                      EMBL; AF144422; AAD53501.1;
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T -> A (IN STRAINS GS-5, MT
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R -> K (IN STRAIN MT8148)

V -> I (IN STRAIN MT8148)

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               V (IN STRAIN MT8148)
A (IN STRAINS GS-5,
                                                                                                                                                                                                                                                                                                                                                                                                                       No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                I (IN STRAINS MT4239 AND P (IN STRAIN MT8148).
                                 Lyase;
                                                                                (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                        DB 1;
0.047;
                                                                                        Usage
                                                                                                                                                                                                                                                                                                                                                                                                                 6
                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1455;
                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GS-5,
                                   Repeat;
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                                                                                           and
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                                                                                           commercia.
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RESULT 8
SC63_HUMAN
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Best Local S
Matches 10
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Q9UGP8; 095380;
16-OCT-2001 (Rel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_
                                                                                                                                                                                                                                                                                                                                                                                                              Poustka A., Klein M., Submitted (JAN-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEC63 OR SEC63L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=20008798; PubMe
Skowronek M.H., Rotter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Translocation protein SEC63 homolog.
                                                                                                                                                                                                          EMBL; AJ011779; CAB46275.1; -.
EMBL; AF100141; AAC83375.1; -.
EMBL; AL137338; CAB70701.1; -.
                                                                                                                                                                                                                                                         entities requires a license agreement (Some send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                               the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                               This
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                                                                                                                                                                                                                                                                                                                                                                                                                           TISSUE=Testis;
Poustka A., Klein
                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 128-759 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hartmann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     homolog."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Molecular characterization of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
INIT MET
DOMAIN
TRANSMEM
DOMAIN
                                                                                                                                       Genew; HGNC:21082; SEC63.
InterPro; IPR001623; DnaJ N.
InterPro; IPR003095; Hsp DnaJ.
InterPro; IPR004179; Sec63.
                                                                                                                Pfam; PF00226; DnaJ; 1. Pfam; PF02889; Sec63; 1.
                                                                                                                                                                                                   PIR;
                                                                   PROSITE; PS00636; DNAJ_1; FALSE_NEG PROSITE; PS50076; DNAJ_2; 1.
                                                                                          PRINTS; PR00625; DNAJPROTEIN SMART; SM00271; DnaJ; 1.
                                              Microsome
                                                        Chaperone;
                                                                                                                                                                                                                                                                                                                                                                           istka A., Klein M., Mewes H.-W., Gassenhuber J., Wiemann mitted (JAN-2000) to the EMBL/GenBank/DDBJ databases. FUNCTION: Required for preprotein translocation.
SUBUNIT: COMPLEX THAT CONTAINS SEC61, SEC62 AND SEC63.
SUBCELLULAR LOCATION: Integral membrane protein. Endop
                                                                                                                                                                                                                                                                                                                                                        SIMILARITY: Contains 1 J domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TaxID=9606;
                                                                                                                                                                                               T46504; T46504.
                                                                                                                                                                                                                                                                                                                   SWISS-PROT entry is copyright. It is produced through sen the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Chem.
                                                                                                                                                                                        P25685; 1HDJ.
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                                                          Transmembrane;
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otter M., Haas I.
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                                                          Protein transport;
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No. 2.3
1; Mismatches
 LUMENAL (POTENTIAL).
POTENTIAL.
CYTOPLASMIC (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                     BY SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 novel
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G.
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                                                                                                                                                                                                                                                                        noved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mammalian
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6 outstation -
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                                                                                                                                                                                               Query Match
Best Local S
Matches
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Q8VHE0; Q8VEI
28-FEB-2003
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DOMAIN
SEQUENCE
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TRANSMEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Phenotypic characterization and positional mapping of the mouse deafness mutation jackson circler (jc)."; Submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
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   modified
entities
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28-FEB-2003 (Rel. 41,
15-SEP-2003 (Rel. 42,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DOMAIN
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=22388257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mack M., Noben-Trauth K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=C57BL/6J
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                                                                           between
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s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EWBL outstation - European Bioinformatics Institute. There are no restrictions on its by non-profit institutions as long as its content is in no way lifted and this statement is not removed. Usage by and for commercial ities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                    SIMILARITY: Contains 1
                                                                                                                                                                     similarity).
SUBCELLULAR LOCATION: Integral membrane protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                246
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9; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PubMed=12477932;
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187
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Last annotation update)
SEC63 homolog.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
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                                                                                                                                    J domain.
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Pred. No. 9.
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LUMENAL (POTENTIAL).
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9.3;
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Best Local
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P11314;
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SMART; SM00271;
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InterPro; IPR003095; Hsp_DnaJ
InterPro; IPR004179; Sec63.
                                                                                                                                                                                                                                                                                    "The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JUL-1989 (Rel.
01-OCT-1993 (Rel.
01-OCT-1994 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROSITE; PS00636; DNAJ_1; PROSITE; PS50076; DNAJ_2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF02889; Sec63;
                                               George C.X., Crowe A., Munemitsu S.M., Atwater J.A., Samuel C.E.;
"Biosynthesis of reovirus-specified polypeptides. Molecular CDNA
cloning and nucleotide sequence of the reovirus serotype 1 Lang
strain s2 mRNA which encodes the virion core polypeptide sigma 2.";
Biochem. Biophys. Res. Commun. 147:1153-1161(1987).

-i- CAUTION: REF. 2 SEQUENCE DIFFERS FROM THAT SHOWN FROM POSITION 3:
                                                                                                                                                                                                                                                                                                                                                                                                   Reovirus (type 1 / strain Lang).
Viruses; dsRNA viruses; Reoviridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sigma 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
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 This
                                                                                                                                                                                      SEQUENCE FROM
                                                                                                                                                                                                                                                                  reovirus
                                                                                                                                                                                                                                                                                                    MEDLINE=92015462; PubMed=1920614; Dermody T.S., Schiff L.A., Nibert
                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=10884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                  MEDLINE=88024195; PubMed=3663211;
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                                                                                                                                                                                                                                                                                    gene nucleotide sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein (Core protein)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                            T.S., Schiff L.A., Nibert M.L., Coombs K.M., Figene nucleotide sequences of prototype strains serotypes: characterization of reovirus core prototypes.
                                                                                                                                                                                                                          65:5721-5731(1991)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   email to license@isb-sib.ch).
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Last annotation update)
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K -> R (IN REF.
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No. 9.3;
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RESULT 11
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01-OCT-1993 (Rel. 27, Last sequence update)
01-OCT-1993 (Rel. 27, Last annotation update)
Sigma 2 protein (Core protein).
Reovirus (type 2 / strain D5/Jones).
Viruses; dsRNA viruses; Reoviridae; Orthoreovirus.
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Pfam; PF03084; Sigma_1_2; 1.
ProDom; PD004419; Sigma_1_2; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for commodified and this statement is not removed.
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                                                                                                                                                                                                                                                                                                                                                                                                                             PIR, B41306; FOXRJS.
InterPro; IPR004317; Sigma_1_2.
Pfam; PF03084; Sigma_1_2; 1.
ProDom; PD004419; Sigma_1_2; 1.
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Pred. No. 9.4;
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                                                                                                                                                                                                                          Score 46; DB
Pred. No. 13;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (See http://www.isb-sib.ch/announce/
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RESULT 12

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BPEB HUMAN

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15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
15-SEP-2003 (Rel. 42, Last annotation update)
Bullous pemphigoid antigen 1, isoform 7 (Bull
(BPA) (Hemidesmosomal plaque protein) (Dyston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sawamura D., Li K., Chu M.-L., Uitto J.;
"Human bullous pemphigoid antigen (BPAG1). Amino acid sequences deduced from cloned cDNAs predict biologically important peptide segments and protein domains.";
J. Biol. Chem. 266:17784-17790(1991).
J. Biol. Chem. 266:17784-17790 (1991).
J. Biol. Chem. 266:1784-17790 (1991).
J. BURLIUN. Cytoskeletal linker protein. Anchors keratin-containing intermediate filaments to the inner plaque of hemidesmosomes. The proteins may self-aggregate to form filaments or a two-dimensional mesh (By similarity).

J. SUBCULTULAR LOCATION: Cytoplasmic (By similarity).

J. SUBCELLULAR LOCATION: Cytoplasmic (By similarity).

J. SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A. (ISOFORM 7), AND TISSUE SPECIFICITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BPAG1 OR DMH OR DT OR KIAA0728.
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                                                                                                                                                                                                                                                            DISEASE.
                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SSUE=Keratinocytes
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                                                                                                                                                    SIMILARITY:
                                                                                                                                                                                                     [MIM:600088], an autoimmune subepithelial skin blisters
IMILARITY: Belongs to the plakin or cytolinker family
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to MACF (microtubul
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  RRONGO OCCUPATION OCCU
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Best Local (
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DOMAIN 126
DOMAIN 511
DOMAIN 564
DOMAIN 706
DOMAIN 1013
DOMAIN 1087
DOMAIN 1108
TOMAIN 1264
REPEAT 349
REPEAT 450
REPEAT 1258
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Pfam; PF00
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR001452; SH3.
InterPro; IPR002017; Spectrin.
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                                                                                                                                                    Arabidopsis thaliana (Mouse-ea
Eukaryota; Viridiplantae; Stre
Spermatophyta; Magnoliophyta;
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16-OCT-2001
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                                                                                                                                                                                                                                                                                   16-OCT-2001 (Rel. 40, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Probable 2,3-bisphosphoglycerate-independent phosphoglycerate mutase 2
Probable 2,3-bisphosphoglyceromutase 2) (BPG-independent PGAM 2) (PGAM-I
SEQUENCE FROM N.A.
STRAIN=cv. Columbia;
MEDLINE=21016720; PubMed=11130713;
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                                                                                                     NCBI_TaxID=3702;
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GO:0045104; P:intermediate
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PF00435; spectrin; 3.
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SM00150; SPEC; 4.
SM00150; SPEC; 4.
Coiled coil; Repeat; SH3
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                                                                                                                              Brassicales;
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htae; Streptophyta; Embry.
liophyta; eudicotyledons;
                                                                                                                                    Brassicaceae;
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RA Rathmann B., Valle G., Bloecker H., Ambodye M., Obermaier B., Ra Fartmann B., Valle G., Bloecker H., Perez Alonso M., Obermaier B., RA Delseny M., Boutry M., Grivell L.A., Mache R., Puigdomenach P., RA Delseny M., Boutry M., Grivell L.A., Mache R., Puigdomenach P., RA Delseny M., Boutry M., Grivell L.A., Mache R., Puigdomenach P., RA B. Schaefer M., Mueller-Auer S., Gabel C., Fuchs M., Quetier F., RA Wincker P., Cattolico L., Weissenbach J., Saurin W., Quetier F., RA Wincher M., Drzonek H., Erfle H., Jordan N., Bangert S., William R., Marghardo M., Pallavicini A., Toppo S., Simionati B., Vangelo M., Pallavicini A., Toppo S., Simionati B., RA Wiedelmann R., Kranz H., Voss H., Holland R., Brandt P., Nyakatura G., RA Wiedelmann R., Kranz H., Voss H., Holland R., Broues M., Teroi J., Climent J., Rakatura P., Collado C., Perez-Perez A., Ottenwaelder B., Duchemin D., RA Conke R., Laudie M., Berger-Llauro C., Purnelle B., Masuy D., RA Cooke R., Laudie M., Berger-Llauro C., Purnelle B., Masuy D., RA Monfort A., Argiriou A., Flores M., Liguori R., Vitale D., Masse D., Schoof H., Rudd S., Zaccaria P., Mewes H.-W., RA Mannhaupt G., Haase D., Schoof H., Rudd S., Zaccaria P., Mewes H.-W., RA Rooney T., Rizzo M., Walts A., Utterback T., Fujii C.Y., Shea T.P., RA Rooney T., Rizzo M., Walts A., Utterback T., Fujii C.Y., Shea T.P., RA Rooney T., Rakas B., Maiti R., Wu D., Peterson J., Van Aken S., Pai B., Militscher J., Sellers P., Gill J.E., Feldblyum T.V., Parken S., Kate T., Asamizu E., RA Fraser C.M., Kaneko T., Nakamura Y., Sato S., Kato T., Asamizu E., RA Sasamoto S., Kimura T., Idesawa K., Kawashima K., Kishida Y., RA Watanabe A., Yamada M., Yasuda M., Tabata S., Muraki A., Muraki A., Yamada M., Yasuda M., Tabata S., Muraki A., Wanada T., Marada M., Yasuda M., Tabata S., Fin L., Walts S., Sato S., Fakeuchi C., Wada T., Marada M., Yasuda M., Tabata S., Sato S., Wata S., Sato S., Fakeuchi C., Wada T., Marada M., Yasuda M., Tabata S., Sato S., Wata S., Sato S., Fakeuchi C., Wada T., Wata S., Sato S., Sato S., Sato S., Sa
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        thaliana.";
Nature 408.820-822(2000).
Nature 408.820-822(2000).
Tatalyzes the interconversion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -!- PATHWAY: Glycolysis.
-!- SUBUNIT: MONOMER (By Similarity)
-!- SUBCELLULAR LOCATION: Cytoplasmi
-!- SIMILARITY: BELONGS TO THE BPG-I
FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It between the Swiss Institute of Bioinfo the European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lemcke K., Rieger
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THE BPG-INDEPENDENT PHOSPHOGLYCERATE MUTASE
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Pfam; PF01676; Metalloenzyme; 1.
ProDom; PD004429; Pgm bpd ind; 1.
TIGRPAMS; TIGR01307; pgm bpd ind; 1.
TIGRPAMS; Glycolysis; Metal-Dinding;
PHONOPHOSE or send an email to license@isb-sib.ch). use by non-profit institutions as modified and this statement is not rementities requires a license agreement InterPro; IPR006124; Metalloenzyme.
InterPro; IPR005995; Pgm_bpd_ind. EMBL; AC012562; AAG51361.1; 473 502 560 29 82 431 435 472 A, 29 82 431 435 472 473 502 60763 82 institutions as long as atement is not removed. I MW; MANGANESE 2 (BY SIMI MANGANESE 2 (BY SINI MANGANESE 1 (BY SIMI MANGANESE 1 (BY SIMI MANGANESE 2 (BY SIMI MANGANESE 2 (BY SIMI MANGANESE 1 (BY SIMI MANGANESE 1 (BY SIMI MANGANESE 1 (BY SIMI binding; Manganese.
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(See http://www.isb-sib.ch/announce/ There are no restrictions ng as its content is in (BY SIMILARITY).
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RESULT 14
SYM_CLOAB
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A Gibson R., Lee H.M., Dubois J., Qiu D., Hitti J., Wolf Y.I.,

A Tatusov R.L., Sabathe F., Doucette-Stamm L., Soucaille P., Daly M.J.,

RA Bennett G.N., Koonin E.V., Smith D.R.;

RT "Genome sequence and comparative analysis of the solvent-producing

RT "Bacteriol. 183:4823-4838 (2001).

CC -:- FUNCTION: Is required not only for elongation of protein synthesis

CC but also for the initiation of all mRNA translation through

CC initiator tRNA(fMet) aminoacylation (By similarity).

CC -:- CATALYTIC ACTIVITY: ATP + L-methionine + tRNA(Met) = AMP +

CC diphosphate + L-methionyl-tRNA(Met).

CC --- COPACTOR: Binds 1 zinc ion per subunit (By similarity).
                                                                                                                                                                                                                                                        PIR; A97268; A97268.

HAMAP; MF 01228; fused; 1.

InterPro; IPR004495; MetG_Cterm.
InterPro; IPR002300; tRNA-synt_Ia.
InterPro; IPR001412; tRNA-synt_I.
InterPro; IPR002304; tRNA-synt_met.
InterPro; IPR002304; tRNA-synt_met.
InterPro; IPR002304; tRNA-synt_Defam; PF00133; tRNA-synt_I.

Pfam; PF00133; tRNA-synt_I; 1.

Pfam; PF00133; tRNA-synt_I; 1.

Pfam; PF00138; tRNA-synt_I; 1.
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28-FEB-2003
28-FEB-2003
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28-FEB-2003 (Rel. 41, Last annotation update)
wethionyl-trnA synthetase (EC 6.1.1.10) (Methionine--trnA ligase)
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STRAIN=ATCC 824 /
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                                                                                                                                                                                              TIGRFAMS; TIGR00398; metG; 1.
TIGRFAMS; TIGR00399; metG_C_term; 1.
PROSITE; PS00178; AA_TRNA_LIGASE_I;
                                                                                                                                                                                                                                                                                                                                                                                                                                           entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   between the Swiss Institute of Bioinfo
the European Bioinformatics Institute
                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; AE007796; AAKB0932.1; -.
                                                                                                                                                     RNA-binding;
                                                                                                                                                                   Aminoacyl-tRNA
                                                                                                                                                                                   PROSITE; PS50886; TRBD;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUBUNIT: Homodimer (By similarity).
SUBCELLULAR LOCATION: Cytoplasmic.
SIMILARITY: Belongs to class-I aminoacyl-tRNA synthetase
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tRNA-binding;
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73618 MW;
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dimerising;
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ZINC (BY SIMI)
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Q01377;
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"Cloning and nucleotide sequence of the cspl gene encoding PS1, cof the two major secreted proteins of Corynebacterium glutamicum: deduced N-terminal region of PS1 is similar to the Mycobacterium antigen B5 complex.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Corynebacterium glutamicum (Brevibacterium flavum).
Bacteria, Actinobacteria, Actinobacteridae, Actinomycetales,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PS1 protein prediction OR CGL2875
                                                                                                                                                                                                                                                                                                                                            "Complete genomic sequence of Corynebacterium glutamicum submitted (MAY-2002) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
STRAIN=ATCC 17965 / Melassecola;
MEDLINE=93023863; PubMed=1406274;
Joliff G., Mathieu L., Hahn V., B
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                                                                                                              Signal; Complete SIGNAL 1
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                                                                                                                                                                                                                                                            the European Bioinformatics Institute.
                                                                                                                                    Pfam;
                                                                                                                                              InterPro;
                                                                                                                                                        InterPro;
                                                                                                                                                                   HSSP;
                                                                                                                                                                                                                                                                                                   FUNCTION: ONE OF THE TWO MAJOR SECRETED PROTEINS.
SUBCELLULAR LOCATION: Secreted.
SIMILARITY: THE N-TERMINAL IS VERY SIMILAR TO THE COMPLETE SEQUENCES OF THE MYCOBACTERIAL ANTIGENS 85-A, 85-B & 85-C.
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                                                                                                                                                                            S25184; S25184.
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(See http://www.isb-sib.ch/announce/
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er 13, 200	NVD 298	NKD 21	53.8%; ative 2	38.8%;	70674 MW;
Search completed: November 13, 2003, 09:45:30 Job time : 8.56398 secs			Best Local Similarity 53.8%; Pred. No. 33; Matches 7; Conservative 2; Mismatches 4; Indels	Score 45; DB 1	657 AA; 70674 MW; E2C3F1B57A7938A3 CRC64;
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Copyright (c) 1993 - 2003 Compugen Ltd.
sp_organelle:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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007382 lactococcus	4		reovir	677 reovirus	575	reovirus	01	reovirus	recvirus	P96402 mycobacteri	arabidopsi	arabidopsi	anabaena s	걸	Q8kz38 uncultured	selenomon			5 mus	piti	Q9rdg2 streptomyce		salmoneila		-		Q00599 streptococc	Q8krel leuconostoc

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Q54178; Q54247;
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STRAIN-26157084; PubMed=8586195;
MEDLINE=96157084; PubMed=8586195;
Vickerman M.M., Sulavik M.C., Clewell D.B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase
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MEDLINE=92276337; PubMed=1534326;
Sulavik M.C., Tardif G., Clewell D.
"Identification of a gene, rgg, whi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=29390;
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Q55265;
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InterPro; IPR003318; Glyco_hydro_7
Pfam; PF01473; CW_binding I; 18.
Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          phase variants."
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   Infect. Immun 63:609-621(1995).

EMBL; 135928; AAC4143.1; -..

InterPro; IPR00489; Csurface antigen.

InterPro; IPR002479; CW binding.

InterPro; IPR003318; Glyco_hydro_70.

Pfam; PF01473; CW binding 1; 11.

Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                           MEDLINE=95122197; PubMed=7822030; Simpson C.L., Giffard P.M., Jacqu "Streptococcus salivarius ATCC 25
                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI .
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                                                                                                                                                                                                                                                                                                                                                                                                                                                         Streptococcus.
                                                                                                                                                                                                                         coding for primer-independent glucosyltransferases.";
                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacteria; Firmicutes;
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BL; U12643; AAC43483.1; -.
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Q55264;
01-NOV-1996 (TrEMBLrel. 01, Crea
01-NOV-1996 (TrEMBLrel. 01, Last
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Glucosyltransferase precursor.
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Glucosyltransferase N (Fragment)
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InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW binding_1; 8.
Pfam; PF03224; Glyco_hydro_70; 1.
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SEQUENCE FROM N.A.

MEDILINE=95122197; PubMed=7822030;

MEDILINE=95122197; PubMed=7822030;

Simpson C.L., Giffard P.M., Jacques N.A.;

Simpson C.L., Giffard P.M., Jacques N.A.;

"Streptococcus salivarius ATCC 25975 possesses at least

"odding for primer-independent glucosyltransferases.";

Infect. Immun. 63:609-621(1995).

EMBL; L35495; AAC41412.1; -.
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NCBI_TaxID=1304;
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1577 AA;
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175290 MW; 3EFB898A7D3A7BF3
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01-NOV-1999
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InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
Signal Transferase
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Plasmid pAM1.
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MEDLINE=21958684; PubMed=11960691; Hanada N., Fukushima K., Nomura Y., Mukasa H., Shiroza T., Abiko Y.;
                                                                                                                                                                                                                                                                                                    Q8KZL5
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1449 AA;
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49 GLUCOSYLTRANSFERASE.
159984 MW; DD62F07306E86A46 CRC64;
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76.2%;
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Pred. No.
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annotation updat
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No.
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                      Senpuku H.,
                                                                                                                                                                                                                                                                                                    1554 AA
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                        Hayakawa
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RESULT 8
Q9L466
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Q9EZH5
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Best Local
                                                                                                                                                                                            Q9EZH5; PRELIMINARY;
Q9EZH5;
01-MAR-2001 (TrEMBLrel. 1
01-MAR-2001 (TrEMBLrel. 1
01-OCT-2002 (TrEMBLrel. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Sequence analy "Sequence Transferase from Leuconostoc meseurce of Uncosyltransferase from Leuconostoc meseurce of Submitted (OCT-1999) to the EMBL/GenBank/DDBJ EMBL; AJ250172; CAB76565.1; -... Interpro; IPR002479; CW binding. Interpro; IPR003318; Glyco hydro 70. Interpro; IPR003318; Glyco hydro 70; 1. Pfam; PF01473; CW binding T; 14. Pfam; PF02324; Glyco hydro 70; 1. Glycosyltransferase; Transferase.
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InterPro; IRR002479; CW binding.
InterPro; IRR003218; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 6.
Pfam; PF023224; Glyco_hydro_70; 1.
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Biochim. Biophys. Acta 1570:75-79(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-OCT-2000 (TrEMBLrel. 15, 01-OCT-2000 (TrEMBLrel. 15, 01-OCT-2002 (TrEMBLrel. 22, 01-OCT-2002 (TrEMBLrel. 22, Dextransucrase (EC 2.4.1.5)
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STRAIN=NRRL B-1355;
Arguello-Morales M.A.,
Willemot R.M., Monsan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacteria;
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01-OCT-2000
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SEQUENCE FROM N.A. STRAIN=B-742CB;
                                                              Bacteria; Firmicutes;
NCBI_TaxID=1245;
                                                                                                                                                  DSRB742
                                                                                                                                                                          Dextransucrase Dsrb742.
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Willemot R.M., Monsan P.;
"Sequence analysis of the gene encoding alternansucrase, a sucrose
"Sequence analysis of the gene encoding alternansucrase, a sucrose
"Sequence analysis of the gene encoding alternansucrase, a sucrose
"Sequence analysis of the gene encoding alternansucrase, a sucrose
"Sequence analysis of the gene encoding alternansucrase, a sucrose
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=1245;
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Bacteria; Firmicutes; Lac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Transferase.
                                                                                                                           leuconostoc mesenteroides.
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15; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     164887 MW;
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16,
22,
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Last seq
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Pred. No. 0.00078;
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branched water-solub
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RESULT 11
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052224;
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01-JUN-1998
01-OCT-2002
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InterPro; IPR002318; Glyco.hydro 70.
Pfam; PF01473; CW binding_I; 14.
Pfam; PF02324; Glyco.hydro 70; 1.
SEQUENCE 1508 AA; 168542 MW; E2FCFA0F87AE4F3A CRC64;
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InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 14.
Pfam; PF02324; Glyco hydro 70; 1.
Glycosyltransferase; Transferase.
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STRAIN=NRRL B-1299;
MONCHOIS V., Remaud-Simeon M., Monsan P., Willemot R.M.;
"Cloning and sequencing of a gene coding for an extracellular dextransucrase (DSRB) from Leuconostoc mesenteroides NRRL B-1299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Leuconostoc mensenteroides B-742CB, a dextransucrase gonomitted (AUG-2000) to the EMBL/GenBank/DDBJ databases
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Bacteria; Fi
                                                                                                                                            Plasmid pAM1.
Bacteria; Firmicutes;
                                                                                                                                                                                                  Streptococcus criceti.
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01-OCT-2002
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                STRAIN=HS-6;
                                                                                          NCBI_TaxID=1333;
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                                          SEQUENCE FROM N.A
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1508 AA;
                                                                                                                                                                                                                                                                                 (TrEMBLrel.) (TrEMBLrel.) (TrEMBLrel.)
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                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;
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71.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 168511 MW;
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71.4%;
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                                                                                                                                                  Lactobacillales; Streptococcaceae;
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06, Last sequence update)
22, Last annotation updat
2.4.1.5).
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Pred. No. 0.00
1; Mismatches
                                                                                                                                                                                                                                                                                    Created)
Last sequence
Last anno
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 78; DB 2; Length 1508; Pred. No. 0.0023; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                583
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              E70CECB57A70D1F0 CRC64;
                                                                                                                                                                                                                                                                                         annotation
                                                                                                                                                                                                                                                                                                          sequence update)
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0.0023;
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                                                                                                                                                                                                                                                                                    update)
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RESULT 12
Q59983
Q5526
JD Q5526
AC Q5526
AC Q5526
DT 01-NC
DT 01-NC
DT 01-OC
DT GTF-I
GN GLUCC
GN GLUCC
GS Strep
OC Strep
OX NCBI
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Best Local S
Matches 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE-94146405; PubMed=8312602;

A Sato S., Inoue M., Handa N., Aizawa Y., Isobe Y., Katayama T.;

I "DNA sequence of the glucosyltransferase gene of serotype d

Streptococcus sobilinus.";

DNA Seq. 4:19-27(1993).

I DNA Seq. 4:19-27(1993).

R EMBL; D1385; BAA02976.1; -.

REMBL; D1385; BAA02976.1; -.

R InterPro; IPR002479; CW binding.

R InterPro; IPR003318; Glyco_hydro_70.

R Pfam; PF01324; Glyco_hydro_70; 1.

R Pfam; PF01324; Glyco_hydro_70; 1.

R Glycosyltransferase; Signal; Transferase.

W Glycosyltransferase; Signal; Transferase.

FOREY SIGNAL

1 38 GLYCOSYTAL
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Best Local .
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Q59983;
01-NOV-1996
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                                                                                                                                                                                                                                 Q55263;
Q55263;
Q1-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-CCT-2002 (TrEMBLrel. 22, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Streptococcus sobrinus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Inoue M., Fukui K., Miyagi A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus.
NCBI_TaxID=1310;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Firmicutes;
                                                      Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                                                                                                                                                                             01-JAN-1998
01-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                              Streptococcus
                                                                                        Streptococcus sobrinus.
                                                                                                                      GLUCOSYLTRANSFERASE.
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                                                                                                                                                                                                                                                                                                                                                                                                                                               477
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                PRELIMINARY;
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GLUCOSYLTRANSFERASE-I

GLUCOSYLTRANSFERASE-I

C3C83A57CF3C2B0E
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05,
22,
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                                                                                                                                                                             Created)
Last sequence update)
Last annotation updat
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Pred. No. 0.00
3; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 74; DB 2;
Pred. No. 0.01;
2; Mismatches
                                                                                                                                                                                                                                                                                                   PRT;
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Q9LCUT 14
Q9LCUT ID Q9LCC
DT 01-00
DT 0
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Q00600
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Best Local S
Matches 14
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Best Local S
Matches 13
                                                                                                                                                                   Q00600;
Q00600;
01-NOV-1996
01-NOV-1996
01-OCT-2002
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Q9LCJ7;
Q9LCJ7;
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SEQUENCE FRO
STRAIN=ATCC
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InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_I; 15-
Pfam; PF02344; Glyco_hydro_70; 1.
SEQUENCE 1590 AA; 176058 MW; 9DF7A3F2C6E4FD43 CRC64;
                                                                                                       glucosyltransferase).
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STRAIN=NRRL B-512F;
MEDLINE=20169623; PubMed=10705445;
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01-OCT-2002
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Ann. Kagoshima Univ. Dental School 16:23-29(1996).
EMBL; D63570; BAA09792.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sato S.;
                                                         Streptococcus salivarius.
Bacteria; Firmicutes; Lactobacillales;
                                                                                                                                                Glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Funane K., Mizuno K., Takahara H., Kobayashi "Gene encoding a dextransucrase-like protein mesenteroides NRRL B-512F.";
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           NCBI_TaxID=1304;
                                       Streptococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lactobacillales; Leuconostoc
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pro; IPR003318; Glyco hydro 70.
PF02324; Glyco hydro 70; 1.
NCB 1016 AA; 110344 MW; 8896BFDB13CCCB47 CRC64;
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A Giffard P.M., Simpson C.L., Milward C.P., Jacques N.A.;

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A Giffard P.M., Simpson C.L., Milward C.P., Jacques N.A.;

"Molecular characterization of a cluster of at least two."

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InterPro; IPR0032479; CW binding.
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Pfam; PF01473; CW binding 1; 13.
Pfam; PF02324; Glyco hydro 70; 1.
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Search completed: November 13, Job time : 33.6493 secs 2003, 09:44:03

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ALIGNMENTS

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; Sequence 2, Application US/09008172
; Patent No. 6127602
; GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0358D
CURRENT APPLICATION NUMBER: US/09/008,172
CURRENT FILING DATE: 1998-01-16
CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
; NUMBER OF SEQ ID NOS: 2
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 2
LENGTH: 1430
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; TYPE: PRT
; ORGANISM: Streptococcus mutans
US-09-604-957-4
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SEQ ID NO 4
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CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE FILE REFERENCE: BO 43388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: VAN GEEL-SCHUTTEN, APPLICANT: DIJKHUIZEN, LUBBEI APPLICANT: RAHAOUI, HAKIM APPLICANT: LEEK, ROBERT-JAN
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; ORGANISM: Streptococcus mutans US-09-008-172-2
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CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER FILING DATE: 1998-01-20
EARLIER FILING DATE: 1998-01-20
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/08,172
EARLIER APPLICATION NUMBER: 09/08,172
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1998-01-6
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                                                         FILE REFERENCE: 0357CRD
CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR PPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION DATE: 1998-01-20
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Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                       Sequence 6, Applicat
Patent No. 6465203
GENERAL INFORMATION:
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Best Local
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TITLE OF INVENTION: Substitutes for Modified Starches
TITLE OF INVENTION: Latexes in Paper Manufacture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
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                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
              PRIOR APPLICATION NUMBER: 08/485,243 PRIOR FILING DATE: 1995-06-07
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                                                                                                                                                                                                                                                                                                                                                                                                                        Application US/09740274
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ilarity 100.0%;
Conservative 0
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NUMBER
                                                                                                                                                                                                                                                                                                                            Glucan-containing Compositions
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09/008,172
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Pred. No. 1.4e-10;
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; LENGTH: 1430
; TYPE: PRT
; ORGANISM: streptococcus mutans
US-09-740-274-6
                                                                                                                                ; MOLECULE TYPE: p
; ORIGINAL SOURCE:
; ORGANISM: Stre
US-08-793-824-2
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US-08-793-824-2
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PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, V6
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/793,824
                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE:
                                                                                                                                                                                                                                                                                                              CLASSIFICATION: 800
PRIOR APPLICATION DATA:
APPLICATION UMBER: AU PM7643
FILING DATE: 24-AUG-1994
TELECOMMUNICATION INFORMATION:
TELEPHNE: 61 2 957 5944
TELEFAX: 61 2 957 6288
                                                                                                                                                                                                                                                                                    INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Simpson, Christine Lynn
APPLICANT: Giffard, Philip Morrison
APPLICANT: Jacques, Nicholas Anthony
TITLE OF INVENTION: Genetic Manipulation of Plants
TITLE OF INVENTION: Increase Stored Carbohydrates
NUMBER OF SEQUENCES: 2
                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
LENGTH: 1577 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
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TELEFAX: 61
TEX: 26547
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Local Similarity 100.0%;
es 21; Conservative
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STREET: Level 8, 168 Walker Street
CITY: No. 5981838th Sydney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
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                                                                                 Local
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5. 5981838
 588 AIAHLSILEAWSYNDHOYNKD 608
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                             1 AINHLSILEAWSDNDPQYNKD 21
                                                                18;
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                                                              h 77.6%;
Similarity 85.7%;
18; Conservative
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                                                                                                                                                Streptococcus salivarius
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Pred. No. 1.4e-10;
); Mismatches 0;
                                                                                   Score 90; DB 2;
Pred. No. 3.1e-06
                                                                     Mismatches
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                                                                                                      DB 2;
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                                                                                                    Length 1577
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US-09-007-999-2
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                                                                                                                                                          ; TYPE: PRT; ORGANISM: Streptococcus mutans US-09-210-361-2
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Best Local Similarity 71.4
Matches 15; Conservative
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APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0356D
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LENGTH: 1475
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                                                                               Matches
                                                                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                         SEQ ID NO 2
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CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 2
SOFTMARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                                                                                  EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER PPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: Substitutes for Modified Starches and TITLE OF INVENTION: Latexes in Paper Manufacture FILE REFERENCE: 0357CR
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                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                      EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                                                    LENGTH: 1475
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481 ANDHLSILEAWSDNDTPYLHD 50:
                             1 AINHLSILEAWSDNDPQYNKD 21
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                                                                               Conservative
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                                                                                             64.7%;
71.4%;
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                                                                                                Score 75;
Pred. No.
                                                                               Mismatches
                                                                                                    0.00087
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RESULT 8 US-09-740-274-2

> RESULT 10 US-09-210-361-4

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SOFTWARE: PATENTIN Ver. 2.1
SEQ ID NO 5
LENGTH: 523
TYPE: PRT
CRGANISM: Leuconostoc mesenteroides
US-09-604-957-5
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PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 08/485,243
                                                                                        Query Match 58.6%; Score 68; DB 4;
Best Local Similarity 66.7%; Pred. No. 0.0036;
Matches 14; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 5, Application US/09604957 Patent No. 6486314
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GENERAL INFORMATION:
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                                                                                      Matches
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILE REFERENCE: 0357CRD
CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR FILING DATE: 1998-12-11
                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                                                                                                                                                                                                       TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388 CURRENT APPLICATION NUMBER: US/09/604,957 CURRENT FILING DATE: 2000-06-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
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PRIOR APPLICATION NUMBER: 09/008,172
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/482,711
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 1475
TYPE: PRT
ORGANISM: Streptococcus mutans
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481 ANDHLSILEAWSDNDTPYLHD 501
75
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                                           1 AINHLSILEAWSDNDPQYNKD 21
ANQHLSILEDWSHNDPLYVTD 95
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LEER, ROBERT-JAN
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71.4%; Pred. No. 0.00087;
tive 1; Mismatches 5;
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US-09-740-274-4
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                                                                        ; ORGANISM: streptococcus mutans US-09-740-274-4
                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER:
PRIOR EILING DATE: 1998-12:
PRIOR APPLICATION NUMBER:
PRIOR EILING DATE: 1998-01:
PRIOR FILING DATE: 1995-06
PRIOR FILING DATE: 1995-06
PRIOR FILING DATE: 1995-01
PRIOR FILING DATE: 1995-01
PRIOR FILING DATE: 1995-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches and
TITLE OF INVENTION: Latexees in Paper Manufacture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 4, Application US/09740274
Patent No. 6465203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local :
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Patent No. 6284479
                                                                                                                                                 SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
Matches
                                   Query Match
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EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER FILING DATE: 1998-01-20
EARLIER FILING DATE: 1998-06-07
EARLIER FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
                                                                                                                                                                NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                       PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/482,711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILE REFERENCE:
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                                                                                                                           LENGTH: 1375
                   Local Similarity
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 Conservative
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1998-12-11
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Pred. No.
 Score 66; DB 4;
Pred. No. 0.025;
1; Mismatches
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US-09-499-203-2
RESULT 14
US-09-604-957-7
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CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
SOFTWARE: PATENTIN Ver. 2.1
SEQ ID NO 2
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Best Local Similarity
Watches 12; Conserv
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APPLICANT: KOSSMANN, Jens
APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KUUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules Encoding Alternansucrase
FILE REFERENCE: 147-196P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 6
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                                                                                                                                     Matches
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Best Local Similarity
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CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
                                                                                                                                                                                                                      TYPE: PRT ORGANISM: Leuconostoc mesenteroides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ENGTH: 584
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                                                                      ANKHLSILEDWNGKDPQY
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66.7%;
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Pred. No. 0.019;
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Pred. No. 0.086;
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Sequence 7, Application US/09604957 Patent No. 6486314

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GENERAL INC. STOCKA.

GENERAL INFORMATION, LUBBERT

APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA

APPLICANT: DIJCHUIZEN, LUBBERT

APPLICANT: LEER, ROBERT-JAN

TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN

FILE REFERENCE: BO 43388

CURRENT APPLICATION NUMBER: US/09/604,957

CURRENT PILING DATE: 2000-06-28

PRIOR APPLICATION NUMBER: 00201871.1

PRIOR APPLICATION NUMBER: 00201871.1

SEQ ID NO 3

SEQ ID NO 3

SEQ ID NO 3

LENGTH: 1278

TYPE: PRT

ORGANISM: Lactobacillus reuteri

US-09-604-957-3
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US-09-604-957-3
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TYPE: PRT
, ORGANIEM: Lactobacillus reuteri
US-09-604-957-7
Search completed: November 13, 2003, 09:47:59 Job time: 13.6351 secs
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN

FILE REFERENCE: 50 43388

CURRENT APPLICATION NUMBER: US/09/604,957

CURRENT FILING DATE: 2000-06-28

PRIOR APPLICATION NUMBER: 00201871.1

PRIOR FILING DATE: 2000-05-25

NUMBER OF SEQ ID NOS: 17

SOFTWARE: PATENTIN Ver. 2.1

SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 46.1%; Score 53.5; DB 4; Length 535; Best Local Similarity 55.6%; Pred. No. 0.94; Matches 10; Conservative 4; Mismatches 3; Indels
                                                                                                                                                                                               Query Match 46.1%; Score 53.5; DB 4; Length 1278; Best Local Similarity 55.6%; Pred. No. 2.7; Matches 10; Conservative 4; Mismatches 3; Indels 1
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APPLICANT: DIJUKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
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553 HINILEDWNHADPEYFNK 570
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77 HINILEDWNHADPEYFNK 94
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Result
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 200000000
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   protein search, using sw model
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1: //ggn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*

2: //ggn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

3: //ggn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

4: //ggn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*

5: //ggn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*

6: //ggn2_6/ptodata/2/pubpaa/US08_NEW_PUB.pep:*

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1 AINHLSILEAWSDNDPQYNKD
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Copyright (c) 1993 - 2003 Compugen Ltd.
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                 9 US-09-740-274-4

10 US-09-995-749A-12

10 US-09-995-749A-2

10 US-09-995-749A-2

10 US-09-915-242-14022

9 US-09-815-242-14022

9 US-10-156-761-12823

15 US-10-156-761-12823

15 US-10-023-282-482

15 US-09-933-767-422

15 US-10-023-282-422

15 US-10-023-282-422

15 US-10-023-282-422
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US-09-740-274-2
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139.565 Million cell updates/sec
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Sequence 2, Appli
Sequence 11, Appli
Sequence 4, Appli
Sequence 4, Appli
Sequence 12, Appli
Sequence 13, Appli
Sequence 2, Appli
Sequence 14022, A
Sequence 12823, A
Sequence 482, App
Sequence 482, App
Sequence 422, App
Sequence 422, App
Sequence 422, App
Sequence 422, App
Sequence 9158, App
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ער	47	2	ν O	٥	5-301	Sequence 14, Appl
17		بر 9.7	4	5	S-10-116-519-1	Sequence 10,
18	46		703	10	-09-768-	e 27, A
19	45		657	10	-09-738-626-	e 6670, A
20	44.5	B	114	15	-10-156-761-	님
21	44.5	œ	1056	12	-10-098-871-	6
22	44		212	15	-10-156-76	7.5
23	44	7	300	9	09-794-960-9	-
24	43.5	7	91	12	-871-	e 75, Aŗ
25	43.5	.7	192	10	09-796-6	Sequence 1790, Ap
0 0	43.5	7	192	10	-09-796-692-	2054,
27	43.5	7	192	15	-10-040-862-	1790,
28		.7	192	15	-10-040-862-	2054,
29	43	.7	691	0	-09-935-868-	20,
ω i		7	691	12	-10-282-162-2	g
31		.7	691	15	-10-287-035-2	20,
32		7	694	10	US-09-935-868-18	18,
LJ LJ	٠	.7	694	10	09-935-868-2	22, App
34	٠	37.5	694	12	10-282-162-1	g
ω 5	43.5	7.	694	12	10-282-162-2	Sequence 22, Appr
36	w	7.	694	15	10-287-035-1	TH, APP
37		7.	694	15	10-287-035-2	, ,
38		37.5	735	12	10-098-871-1	7
9	43.5	7.	739	12	10-098-871-6	φ. -
40		7	739	12	-10-098-871-6	0 0
41	43.5	7	776	10	-09-935-868-3	. 6
42		7	776	10	-09-935-868-4	40,
43	43.5	37.5	776	10	9-935-868-	44,
44	w	37.5	776	<u>,,,</u>	-10-287-035-3	e 36,
4 <u>4</u> 5	43.5	37.5	776	15	US-10-287-035-40	40,
					ALIGNMENTS	
ULT 1	-749A-	10				
equenc atent	e 10, No. US	equence 10, Application Uatent No. US20020155568A1	ion US	/09	US/09995749A .1	
ENERAL	INFOR	ENERAL INFORMATION:	SCHILLIAN.	Į Ž	GERRITOINA HENDRIKA	
APPLICANT:	,	DIJKHUIZEN, LUBBERT	EN, LU	BBE	RT	
APPLICANT:			HAKIM	7		
AFFLE OF T	OF INV	TENTION:	ROBERT OAN	9 A	INVENTION: NOVEL GLUCOSYLTRANSFERASES	

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RESULT
                                                                                                                                 SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 10
LENGIN: 545
TYPE: PRT
ORGANISM: Streptococcus mutans
US-09-995-749A-10
                                                                                                                                                                                                                                     TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE
FILB REFERENCE: BO43388-CIP
CURRENT APPLICATION UNMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR PPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
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                     AINHLSILEAWSDNDPQYNKD 21
   AINHLSILEAWSDNDPQYNKD
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RESULT 2 US-09-740-274-6 ; Sequence 6, Application US/09740274 ; Patent No. US20020031826A1

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GENERAL INFORMATION:

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                                                          ; LENGTH: 1475
; TYPE: PRT
; ORGANISM: Streptococcus mutans
US-09-740-274-2
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SEQ ID NO 6
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Best Local Similarity
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SEQ ID NO 2
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Patent No. US20020031826A1
 Matches
                            Query Match
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
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PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                        CURRENT FILING DATE: 2000-12-19
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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PRIOR FILING DATE: 1995-06-07
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PRIOR FILING DATE:
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PRIOR APPLICATION NUMBER:
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TYPE: PRT
ORGANISM: streptococcus
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               Local Similarity
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R FILING DATE: 1998-01
R APPLICATION NUMBER:
R FILING DATE: 1995-06
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                                                                                                                                                                APPLICATION NUMBER: 05,000 DATE: 1998-01-16
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               Score 75; DB 9; Length 1475; Pred. No. 0.0091;
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Pred. No. 4.5e-09;
); Mismatches 0;
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CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR PPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
NUMBER OF SEQ ID NOS: 19
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PRIOR FILING DATE: 1998-01
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-06
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-01
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APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
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                                                                                                    SEQ ID NO 4
LENGTH: 1375
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
Query Match
Best Local Similarity
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APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
                                                                                                                                                                                                                                                                                                                                                                                                                                    FILE REFERENCE: 0357CRD
CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
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PRIOR FILING DATE: 1998-C
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                                                                                                                                           SOFTWARE:
                                                                                                                                                          NUMBER OF SEQ ID NOS:
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                                                                                                                                                                                              PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH: 522
                                                                    ORGANISM: streptococcus mutans
                                                                                     TYPE: PRT
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Local Similarity 66.7%;
es 14; Conservation
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BER: 09/210,361
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Pred. No. 0.
 Score 66;
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                   DB 9;
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RESULT 6
US-09-995-749A-12
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SEQ ID NO 13
LENGTH: 535
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ORGANISM: Leuconostoc mesenteroides
-09-995-749A-12
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CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
                                                                                                                 TYPE: PRT
ORGANISM: Lactobacillus reuteri
-09-995-749A-13
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APPLICANT: DIJKHUIZEN, LUBBERT
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PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
FILE REFERENCE: BO43388-CIP
                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
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TLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
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77 HINILEDWNHADPEYFNK 94
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                         4 HISTLEAWSDNDPQY-NK 20
                                                       l Similarity 55.0
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RAHAOUI, HAKIM
LEER, ROBERT-JAN
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1; Mismatches
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                                                                      Score 53.5;
Pred. No. 6;
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0.16;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 2, Application US/09995749A Patent No. US20020155568A1
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Best Local
SEQ ID NO 14022
LENGTH: 429
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APPLICANT:
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APPLICANT: DIJKHUIZEN, LUBBERT
                                                         PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
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CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
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                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,948
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
                                                                                                                                                                                                                                                                                                                                                                                   FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
                                                                                                                                                                    PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION: Identification of Essential Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Haselbeck, Robert
                                       SOFTWARE: FastSEQ for Windows Version 4.0
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TYPE: PRT
ORGANISM: Lactobacillus reuteri
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Zyskind, Judith W.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Yamamoto, Robert T.
Xu, H. Howard
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Pred. No. 2
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PRIOR APPLICATION NUMBER: JO02-05-29
PRIOR FILING DATE: 2002-05-29
PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 12823
LENGTH: JC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; ORGANISM: Salmonella typhi
US-09-815-242-14022
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Best Local
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CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
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APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                    PRIOR PILING DATE: 2001-02-21
                                                                                                                                                                                                                 FILE REFERENCE: PZ007P2
CURRENT APPLICATION NUMBER: US/09/933,767
CURRENT FILING DATE: 2001-08-22
                                                                                                                                                                                                                                                          APPLICANT: Ni et al.
TITLE OF INVENTION: 207 Human Secreted Proteins
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TYPE: PRT
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                                                                                              OR FILING DATE: 2001-02-21

OR APPLICATION NUMBER: 60/184,836

OR FILING DATE: 2000-02-24

OR APPLICATION NUMBER: 60/193,170

OR FILING DATE: 2000-03-29

OR APPLICATION NUMBER: 09/205,258

OR FILING DATE: 1998-12-04
                                                     APPLICATION NUMBER: PCT/US98/11422
FILING DATE: 1998-06-04
APPLICATION NUMBER: 60/048,885
                           APPLICATION NUMBER:
                                          FILING DATE:
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l Similarity 47.6%;
10; Conservative
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8; Conserve
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HORIKAWA, HIROSHI
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o. US20030181692A1
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US20030119018A1
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, HARUO
                                         1997-06-06
                1997-06-06
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60/048,881
                         60/049,375
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
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14;
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APPLICATION I
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PRIOR APPLICATION NUMBER: 60
PRIOR FILING DATE: 1997-06-0
PRIOR APPLICATION NUMBER: 60
PRIOR FILING DATE: 1997-06-0
PRIOR FILING DATE: 1997-06-0
PRIOR FILING DATE: 1997-06-0
PRIOR APPLICATION NUMBER: 60 PRIOR FILING DATE: 1997-06
PRIOR APPLICATION NUMBER: PRIOR APPLICATION NUMBER: APPLICATION NUMBER: APPLICATION NUMBER: 60/048,964 APPLICATION NUMBER: 60/048,895 FILING DATE: 1997-06-06 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,876 APPLICATION NUMBER: 60/049,020 APPLICATION NUMBER: 60/048,880 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,896 FILING DATE: 1997-06-06 FILING DATE: 1997-05-06
APPLICATION NUMBER: 60/048,897
APPLICATION 1997-06-06 APPLICATION NUMBER: 60/048,882 APPLICATION NUMBER: 60/048,971 APPLICATION NUMBER: 60/048,884 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,962
FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,963
FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,877 FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,949
FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,974 APPLICATION NUMBER: 60/048,893 APPLICATION NUMBER: FILING DATE: 1997-06-06 APPLICATION NUMBER: APPLICATION NUMBER: 60/048,901 APPLICATION NUMBER: 60/048,900 APPLICATION NUMBER: 60/068,054 FILING DATE: 1997-12-18 APPLICATION NUMBER: 60/068,064 APPLICATION NUMBER: 60/048,878 FILING DATE: 1997-06-06 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,898 APPLICATION NUMBER: 60/049,374 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,875 APPLICATION NUMBER: FILING DATE: 1997-06-06 APPLICATION NUMBER: APPLICATION NUMBER: APPLICATION NUMBER: FILING DATE: 1997-06-06 FILING DATE: 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-12-18 60/048,894 60/048,892 60/048,899 60/048,883 60/048,916 60/048,972 60/048,970 60/049,019 60/048,915 60/068,054 60/048,917 60/049,373

NUMBER: 60/070;923

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PEATURE:
NAME/KEY: SITE
LOCATION: (111)
OTHER INFORMATION: Xaa equals any of the naturally occurring L-amino
NAME/KEY: SITE
LOCATION: (575)
COTHER INFORMATION: Xaa equals any of the naturally occurring L-amino
US-09-933-767-482
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LENGTH: 623
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PRIOR FILING DATE: 1998-07-30
NUMBER OF SEQ ID NOS: 1245
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CURRENT APPLICATION NUMBER: US/10/023,282
CURRENT FILING DATE: 2001-12-20
EARLIER APPLICATION NUMBER: 09/205,258
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ORGANISM: Homo sapiens
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OR FILING DATE: 1998-01-30
OR FILING DATE: 1998-01-30
OR FILING DATE: 1998-01-30
OR APPLICATION NUMBER: 60/085,925
OR APPLICATION NUMBER: 60/085,925
OR APPLICATION NUMBER: 60/085,921
OR FILING DATE: 1998-05-18
OR FILING DATE: 1998-05-18
OR APPLICATION NUMBER: 60/085,923
OR FILING DATE: 1998-05-18
OR APPLICATION NUMBER: 60/085,923
OR APPLICATION NUMBER: 60/092,921
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OR FILING DATE: 1998-05-18
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APPLICATION NUMBER: 60/073,165
FILING DATE: 1998-01-30
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APPLICATION NUMBER: 60/073,160
                  ER FILING DATE: 1997-06-06
ER APPLICATION NUMBER: 60/048,880
ER FILING DATE: 1997-06-06
ER APPLICATION NUMBER: 60/048,896
ER FILING DATE: 1997-06-06
ER APPLICATION NUMBER: 60/049,020
ER FILING DATE: 1997-06-06
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FILING DATE: 1998-06-04
APPLICATION NUMBER: 60/048,885
FILING DATE: 1997-06-06
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52.9%; Pred. No. 35;
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SOFTWARE: PatentIn V
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TYPE: PRT
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EARLIER BARLIER EARLIER APPLICATION NUMBER: 60/094,657 EARLIER FILING DATE: 1998-07-30 NUMBER OF SEQ ID NOS: 1227 EARLIER EARLIER EARLIER EARLIER EARLIER EARLIER **SARLIER** ARLIER **ARLIER** EARLIER EARLIER EARLIER EARLIER EARLIER EARLIER EARLIER EARLIER SARLIER ARLIER SARLIER **EARLIER** EARLIER SARLIER **EARLIER** BARLIER **EARLIER** BARLIER R FILING DATE: 1997-06-06
R APPLICATION NUMBER: 60/049,374
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R APPLICATION NUMBER: 60/048,917
R FILING DATE: 1997-06-06
R APPLICATION NUMBER: 60/048,949 APPLICATION NUMBER: 60/048,894
PILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,971
FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/049,019
FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,970 FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,882
FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,884 FILING DATE: 1997-06-06 FILING DATE: 1997-06
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FILING DATE: 1997-06 APPLICATION NUMBER: 60/048,972 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,916 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,892 APPLICATION NUMBER: APPLICATION NUMBER: 60/ FILING DATE: 1997-06-06 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,964 APPLICATION NUMBER: 60/048,875 FILING DATE: 1997-06-06 APPLICATION NUMBER: APPLICATION NUMBER: 60/048,901 FILING DATE: 1997-06-06 APPLICATION NUMBER: APPLICATION NUMBER: 60/092,921 FILING DATE: 1998-07-15 FILING DATE: APPLICATION NUMBER: 60/049,373 FILING DATE: 1997-12-18 APPLICATION NUMBER: 60/070,923 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,878 APPLICATION NUMBER: 60/048,877 FILING DATE: 1997-06-06 APPLICATION NUMBER: 60/048,963 APPLICATION NUMBER: 60/048,962 FILING DATE: APPLICATION NUMBER: FILING DATE: FILING DATE APPLICATION NUMBER: 60/048,883 FILING DATE: APPLICATION NUMBER: 60/048,974 FILING DATE: FILING DATE: ILING DATE: 1997-06-06 LING DATE: 1997-06-06 LING DATE: CATION NUMBER: 60/048,897 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 1997-06-06 60/048,899 60/048,895 60/048,900 60/048,893 60/048,898 60/048,915

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; LOCATION: (575)
; OTHER INFORMATION:
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CURRENT FILING DATE: 2001-08-22
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FILING DATE: 1998-06-04
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APPLICATION NUMBER: 60/048,899
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FILING DATE: 1997-06-06
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APPLICATION NUMBER:
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APPLICATION NUMBER: 60/048,974
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APPLICATION NUMBER: 60/048,875
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APPLICATION NUMBER: 60/068,053
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APPLICATION NUMBER: 60/092,921
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RESULT 14
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EARLIER APPLICATION NUMBER: 60/048,880
EARLIER FILING DATE: 1997-06-06
EARLIER APPLICATION NUMBER: 60/048,896
EARLIER FILING DATE: 1997-06-06
EARLIER FILING DATE: 1997-06-06
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EARLIER APPLICATION NUMBER: 09/205,258
EARLIER FILING DATE: 1998-12-04
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EARLIER APPLICATION NUMBER: 60/049,020
EARLIER FILING DATE: 1997-06-06
EARLIER APPLICATION NUMBER: 60/048,876
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   ER APPLICATION NUMBER: 60/048,916
ER FILING DATE: 1997-06-06
ER APPLICATION NUMBER: 60/049,373
ER FILING DATE: 1997-06-06
ER APPLICATION NUMBER: 60/048,875
ER FILING DATE: 1997-06-06
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191 IMVLAGASEFDPQYNKD 207
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APPLICATION NUMBER: 60/048,971
FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,964
FILING DATE: 1997-06-06
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APPLICATION NUMBER: 60/
FILING DATE: 1997-06-06
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APPLICATION NUMBER: 60/049,019
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                                                    , ORGANISM: Streptomyces avermitilis US-10-156-761-9158
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US-10-156-761-9158
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APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: HORIKAWA, HIROS
APPLICANT: SHIBA, TADAYOSE
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SEQ ID NO 422
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Matches 9; Conserv
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SEQ ID NO 9158
LENGTH: 216
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PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR PILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
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CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
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APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
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                                                                                         TYPE: PRT
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APPLICATION NUMBER: 60/
FILING DATE: 1997-06-06
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FILING DATE: 1997-06-06
APPLICATION NUMBER: 60/048,877
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ISHIKAWA, JUN
HORIKAWA, HIROSHI
SHIBA, TADAYOSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LING DATE: 1997-06-06
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Pred. No.
   Score 48;
Pred. No.
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     DB 15;
16;
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Search completed: November 13, 2003, 10:29:02 Job time : 28.4692 secs	:: Db	Qy 4 HLSILEAWSDNDPQ 17	Matches 9; Conservative 2; Mismatches 3; Indels 0; Gaps 0
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A_Geneseq_19Jun03:*

1: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1980.DAT:*

2: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1981.DAT:*

3: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1982.DAT:*

4: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1983.DAT:*

5: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1985.DAT:*

6: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1985.DAT:*

7: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1985.DAT:*

8: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1985.DAT:*

9: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1987.DAT:*

10: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1989.DAT:*

10: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1989.DAT:*

11: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*

12: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*

13: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*

14: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*

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16: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*

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18: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1999.DAT:*

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20: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA199.DAT:*

21: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA199.DAT:*

22: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA199.DAT:*

23: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA2000.DAT:*

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24: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA2002.DAT:*

24: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA2003.DAT:*
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Copyright (c) 1993 - 2003 Compugen Ltd.
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

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108	108	108	108	108	108	108	108	119	Score	
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S. mutans gluccsyl	S. mutans gluccsyl	 mutans gluccsyl 	S. mutans gluccsyl	S. mutans gluccsyl	S. mutans gluccsyl	S. mutans gluccsyl	Streptococcus muta	Glucosyltransferea	Description	

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- comprises Streptococcus one nucleotide added or													ENTS	, millidosoid	reception of the contract of t	Amino acid seque	Novel cei	Dextrane LDL rece	Dextrane	Dextrane Dextrane	Lactobac	Human po	T. thermo	Arabidop Dextran	Dextrane	Alpha	Dextr	Dextr	S. mu Dextr	S. mu	s. mu	s. mutans glucosyl	Strep	Strep S. mu	s: mu	s. mu	S. mu	S. mutans glucosyl

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Best Local
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               Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            glucosyltransferase-I (and mutants). The DNA, was obtd. by treating S. sobrinus 6715 with mutanolysin, extracting the chromosomal DNA, partially digesting with Sau3AI and fractionating on agarose gel. The 3-5 kbp fragment was ligated into pUC18 and E. coli JM109 transformed with it. A GT-1 expressing clone was isolated and sequenced. The clone may be used in the development of a drug for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Antibody; dental caries; water insoluble glucan synthetase; anti-caries; glucosyl transferase-B; immunotherapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                              The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17566) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyltransferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyltransferase-B and is used in the immunotherapy of dental caries. This transferase-B and is used in the immunotherapy of dental caries.
                                                                                                                                                                                                                                                                                                                                                                                                    04-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                  04-OCT-2000; 2000JP-0304889.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Streptococcus mutans monoclonal antibody-related protein #2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAU79285 standard; Protein; 1017 AA
                                                                                                                                                                                                                                                                               Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
                                                                                                                                                                                                                                                    Claim 4; Page 17-19; 28pp; Japanese.
                                                         Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sequence from Streptococcus sobrinus strain 6715
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                                                                                                    represents a Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1592 AA;
                                                            1017 AA;
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Conservative
                                                                                                                                                                                                                                                                                                                                                                                                    2000JP-0304889
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               90.8%;
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               Score 108;
Pred. No. 1.
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Pred. No. 6.4e-09;
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    Mismatches
                 DB 23;
                                                                                                          monoclonal antibody-related
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                              Length 1017;
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CC (GTF) B polypeptide having changes at position from I448V, D457N, D57TK, T057TK, M1014T, D457N/D57TK, D567T/D57TK, D567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S. mutans glucosyltransferase
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07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      amyloplast; vacuole; paper
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; ABK52938
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure; Page 21-25; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (NICH/) NICHOLS
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98US-0007999.
98US-0008172.
98US-0009620.
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AAU98030 ID AAU980 ID AAU9
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Best Local :
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glucosyltransferase; coating composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAU98030 standard; Protein; 1475
                                                                                                                                                                                paper
                                                                                                                                                                                                        Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i
                                                                                                                                                                                                                                                                                      WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16-JAN-1998;
16-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           amyloplast;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-AUG-2002
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                                                                                                                                                                                manufacture, comprises mutations in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 ANNHVSIVEAWSDNDTPYLHD 21
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ANDHISILEAWSDNDTPYLHD
                                                                                                                               Page -;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                              98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "Wild-type Ile substituted by Val"
                                                                                                                            44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      90.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           paper manufacture; mutant; mutein.
                                                                                                                               English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3;
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Pred. No. 2.7e-07;
3; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTFB mutant I448V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            501
                                                                                                                                                                                     specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 1475;
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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, I148V/D457N/D567T/D571K/K1014T,

19-DEC-2000; 2000US-0740274

14-MAR-2002

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RESULT 5
AAU98017
IID AAU5
XX AAU5
XX AAU5
XX AAU5
DT 27-1
DE S. 1
DX XX Gluc
XX Gluc
XX Coat
XX Au
XX Stre
OS Stre
OS Synt
XX Synt
XX Key
FT Miser
FT Miser
PD 14-1
PF 19-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CC thanges at positions from TS89D, TS89E, NA71D, NA71D/TS89D, and CM TS89E, NA71D/TS89E). Also included are a glucan produced by the GTF mutant, CC an isolated polymucleotide which encodes pl or P2, or its complementary CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, comprising the glucan is produced in the amyloplast and/or vector, a starch biosynthesis, transformed with a gene encoding a glucan produced in the smyloplast and/or vector a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a CC plant cell with the vector growing the plant cell under plant suseful comprising the glucan in a plant. The method comprise transforming a plant cell with the vector, growing the plant cell under plant growing CC polymucleotide for a time sufficient to produce the glucan in the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the CC polymucleotide for a time sufficient to produce the glucan in the comprising the glucan protein to produce the glucan plant, where the vector ontains a transit sequence from CC comprising the plant substitutes for and additions to modified starch comprised the plant growing the plant and inducing expression of the cell with the acceptance of potato or the vacuole of sugar beet.

CC glucans are useful as substitutes for and additions to modified starch comprised the plant and glucan cell entities and plant and plant
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                              Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                  S. mutans glucosyltransferase GTFB mutant D457N
                                                                                                                                                                                             Synthetic
                                                                                                                                                                                                                  Streptococcus
                                                                                                                                                                                                                                                     amyloplast;
                                                                                                                                                                                                                                                                            coating
                                                                                                                                                                                                                                                                                                                                                                           27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAU98031 standard;
                                                                              US2002031826-A1
                                                                                                                                    Misc-difference
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ANNHVSIVEAWSDNDTPYLHD 21
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                                                                                                                                                                                                                                                         vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                    mutans
                                                                                                                                        Location/Qualifiers 457
                                                                                                                     /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Protein; 1475
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85.7%;
                                                                                                                                                                                                                                                       GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule; paper manufacture; mutant; mutein.
                                                                                                                   "Wild-type Asp substituted
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 108; DB 23;
Pred. No. 2.7e-07;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 1475;
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cc (GFF) B polypeptide having changes at position from 1448V, D457N, D567T, KD194T, D457N/D57TK, D567T/D57TK, CC D567T, KD194T, D457N/D567T, D457N/D57TK, D567T/D57TK, CC D567T, STR/KD194T, 1448V/D457N/D567T/D57TK/KD194TK, CC P169A/K170A/K171A, and K779Q or a GFF D polypeptide having changes at positions from T59D, T59DE, M47D, N47D/T589D, and K779Q or a GFF D polypeptide having complementary an isolated polymunlectide which encodes P1 or P2, or its complementary complymunlectide, a ribonucleic acid sequence encoding the GFF mutant, complementary at the comprising the expression cassette, host cell comproduced by the GFF mutant, complementary and composition comprising the expression cassette, host cell comproduced, a seed or tuber from the transgenic plant comprising the vector, a seed or tuber from the transgenic plant comprising the vector, a seed or tuber from the transgenic plant comprising the plant and starch his produced in the amyloplast and/or vacuole or a maize line comprising the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucan produced with a gene encoding a glucan produced with a gene encoding a glucan produced in the ector, growing the plant and apper and produced in the produce a regenerated plant and expression of the comprising the glucan (paper sizing/coating gent). The vector is useful comprised the produce the plant growing a plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the comprised plant, where the vector contains a transit sequence from the polymuclectide for a time sufficient to produce the glucan in the complementally finendly. Moreover, glucans are and additions to modified starch compared to the paper during coating separation of the present sequence is not shown in the specification but comprised by the indexer using the GFF mutant of the invention.

CC manufacture utilising the just a produce appearing as AAU98027 and the inference as 
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                                                                       Query Match
Best Local S
Matches 18
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07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
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 481
                                                                         18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NICHOLS
                                                                                            Similarity
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                                   ANNHVSIVEAWSDNDTPYLHD 21
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        English
                                                                                          Score 108; DB 23;
Pred. No. 2.7e-07;
                                                                            Mismatches
                                                                              0;
                                                                                                                Length 1475;
                                                                                0
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RESULT 6

protein

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produce a transgenic

plant,

and glucan

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AAU98032

AAU98032

AAU98032

AAU98032

AAU98032

AAU9022

AAU902

AAU
                                                                   The invention an isolated protein comprising a glucosyltransferase CC (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D571K, D567T/D571K, D567T/D571K, CC D567T, K1014T, D457N/D567T, D57TK, K1014T, 1448V/D457N/D567T/D571K, K779Q/K1014T, CC Y159A/Y17D4/Y171A, and K779Q or a GTF D polypeptide having CC Y159A/Y17D4/Y171A, and K779Q or a GTF D polypeptide having CC AM71D/T599E. Also included are a glucan produced by the GTF mutant, CC M471D/T599E. Also included are a glucan produced by the GTF mutant, CC an isolated polymuclectide which encodes Pl or P2, or its complementary CC an isolated polymuclectide comprising the expression cassette, host cell CC promoter, a vector comprising the polymuclectide operably linked to a CC promoter, a vector comprising the polymuclectide host cell CC introduced with the vector, a transgenic plant, a paper sizing and/or vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC with a gene encoding the their combinations or glucan and starch where the glucan in starch biosynthesis, transformed with a gene encoding a comprising the glucan produced with a gene encoding a comprising the glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the plant cell under plant, where the vector contains a transit sequence from cregenerated plant, where the vector contains a transit sequence from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          amyloplast; vacuole; paper manufacture; mutant; mutein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S. mutans glucosyltransferase GTFB
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07-JUN-1995;
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16-JAN-1998;
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                              regenerated plant, where the vector contains a transit sequence from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
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95US-0478704.
95US-0482711.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                        11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mutans glucosyltransferase GTFB mutant K1014T.
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                                                                        Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    amyloplast; vacuole;
                                            Claim 36; Page -; 44pp; English.
                                                                                                                                        WPI; 2002-414332/44
                                                                                                                                                                                                                                20-JAN-1998;
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16-JAN-1998;
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                                                                                                                                                                                                 (NICH/) NICHOLS
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95US-0485243.
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98US-0008172.
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                                                                                                                                                                                                                                                                                                                                                                                                                                             /note= "Wild-type Lys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          90.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule; paper manufacture; mutant; mutein.
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Pred. No. 2
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                                                                                                                                                                                                                                                                                                                                                                                                                                                substituted by Thr"
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2.7e-07;
hes 0;
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invention B polypeptide

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isolated protein o ide having changes

comprising a glucosyltransferase s at position from I448V, D457N,

US2002031826-A1

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RESULT 8
AAU398034
ID AAU39
AC AAU3
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co introduced with the vector, a transgenic plant comprising the
co vector, a seed or tuber from the transgenic plant, a paper sizing and/or
coating composition comprising a glucan produced in a plant transformed
co with a gene encoding the mutant GTF, wild type or, starch, a latex,
thermoplastic molecule or their combinations or glucan and starch where
co the glucan is produced in the amyloplast and/or vacuole or a maize line
co glucosyltransferase B or D enzyme, wild-type or mutant and a paper
co comprising the glucan in a plant. The method comprises transforming a
comprising a glucan in a plant. The method comprises transforming a
conditions to produce a regenerated plant and inducing expression of the
conditions to produce a regenerated plant and inducing expression of the
conditions to produce a regenerated plant and inducing expression of the
conditions to produce a regenerated plant and inducing expression of the
conditions to produce a regenerated plant and inducing expression of the
conditions to produce a regenerated plant and inducing expression of the
conditions to produce a regenerated plant and inducing expression of the
conditions to produce a regenerated plant and inducing expression of the
conditions biphosphate carboxylase small subunit, waxy, brittle-1 and
conditions to make the vector contains a transferic plant, and glucan
is produced in the amyloplast of potato or the vacuole of sugar beet.
conditions are useful as substitutes for and additions to modified starch
conditions in paper manufacture. Unlike prior art techniques, which
condities innut materials that produce chemical effluents. Daper
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Matches 18
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                                                                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S. mutans glucosyltransferase GTFB mutant D457N/D567T
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                                                                                                                     Misc-difference
                                                                                                                                                                                                                                                                                                          Synthetic
                                                                                                                                                                                                                                                                                                                                                  Streptococcus mutans
                                                                                                                                                                                            Misc-difference
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                                                                                                                                                                                            Location/Qualifiers
                                                                                                                         567
                                                                                  /note=
                                                                                                                                                     note= "Wild-type Asp substituted by Asn"
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                                                                              "Wild-type Asp substituted
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Pred. No. 2.7e-07;
3; Mismatches 0;
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                                                                                          by Thr"
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centroused with the vector, a transgenic plant comprising the cotor, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, and the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating agent encoding a glucan in a plant. The method comprises transformed with a gene encoding a comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a complications to produce a regenerated plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the collymucleotide for a time sufficient to produce the glucan in the collymucleotide for a time sufficient to produce the glucan in the collymucleotide for a time sufficient to produce the glucan in the collymucleotide for a time sufficient to produce the glucan in the collymorphyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Comprise input materials that produce chemical effluents, paper manufacture. Unlike prior art techniques, which creative intermedially friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

The present sequence represents a GTFB mutant of the invention.

The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
Query Match
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes Pl or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D571K, D567T,D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, D567T/D571K, M71D71K, M71D71K
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                                                                                                    Sequence
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                                                                                                           A
          90.8%;
          Score 108; DB 23; Pred. No. 2.7e-07;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         specific positions
                                             Length 1475;
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ANNHVSIVEAWSDNDTPYLHD

Matches

Similarity

Conservative

ω ••

Mismatches

0; Gaps

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RESULT 9
AAU98035
AU AAU98
XX AAU98
XX AAU9
XX AAU9
XX S. T XX S. T XX XX S. T XX S. T
CC (GTF) B polypeptide having changes at position from I448V, D457N/D571K, D567T/D571K, N1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, N1014T, T448VD457N/D571K, D567T/D571K, N1014T, T448VD457N/D571K, D567T/D571K, N1014T, D457N/D571K, D567T/D571K, N1014T, D457N/D571K, D567T/D571K, N1014T, D667T MUTANT, D667T MU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S. mutans glucosyltransferase GTFB mutant D457N/D571K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAU98035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glucosyltransferase; GTFB; transgenic plant; coating composition; glucan; starch; latex; t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27-AUG-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 standard; Protein; 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    vacuole; paper manufacture; mutant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98US-0210361.
95US-0478704.
95US-0482711.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98US-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98US-0007999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9508-0485243
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ທ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "Wild-type Asp substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              note= "Wild-type Asp substituted by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -0008172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  c plant; paper sizing;
latex; thermoplastic molecule;
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plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polymucleotide for a time sufficient to produce the glucan in the created plant, where the vector contains a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and controphyll AB binding protein to produce a transgenic plant, and glucan cis produced in the amyloplast of potato or the vacuole of sugar beet. Clucans are useful as substitutes for and additions to modified starch crequire input materials that produce chemical effluents, paper canditative utilising the glucan produced by GTF, which utilises convironmentally friendly Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. Clark present sequence represents a GTFB mutant of the invention but canditation the information in claim is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 18
                                                                                                                                                     11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S. mutans glucosyltransferase GTFB mutant D567T/D571K
                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus mutans.
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                              coating
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAU98036;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU98036 standard; Protein;
                                                                                                                                                                                                                                                                                                                 Misc-difference
                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                  amyloplast; vacuole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-AUG-2002
              WPI; 2002-414332/44
                                           Nichols SE;
                                                                                                 20-JAN-1998;
                                                                                                              16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                              19-DEC-2000;
                                                                                                                                                                                                                                           14-MAR-2002
                                                                                                                                                                                                                                                                       US2002031826-A1
                                                                    (NICH/)
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                                                                                                                                            -1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . Similarity 85. 
18; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                              composition;
                                                                      NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANNHVSIVEAWSDNDTPYLHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ANDHLSILEAWSDNDTPYLHD 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1475
                                                                                                                                                                                                                 2000US-0740274.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                             95US-0478704.
95US-0482711.
95US-0485243.
95US-0485243.
98US-0007999.
98US-0008172.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AA;
                                                                                                                                                                                     98US-0210361.
                                                                                                                                                                                                                                                                                                                /note= "Wild-type Asp substituted by 571
                                                                    Ġ
                                                                                                                                                                                                                                                                                                  /note= "Wild-type Asp substituted by Lys"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        90.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                            GTFB; transgenic plant; glucan; starch; latex; t
                                                                                                                                                                                                                                                                                                                                                                                                                                paper manufacture; mutant; mutein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           u
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 108; DB
Pred. No. 2.7e
3; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                21
                                                                                                                                                                                                                                                                                                                                                                                                                                                 : plant; paper sizing; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 23;
2.7e-07;
hes 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
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Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                 useful
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44pp; English.

cc promoter, a vector comprising the expression cassette, host cell
cc promoter, a vector comprising the expression cassette, host cell
cc introduced with the vector, a transgenic plant comprising the
cc vector, a seed or tuber from the transgenic plant, a paper sizing and/or
cc coating composition comprising a glucan produced in a plant transformed
cc with a gene encoding the mutant GTF, wild type or, starch, a latex,
cc the glucan is produced in the amyloplast and/or vacuole or a maize line
cc the glucan is produced in the amyloplast or glucan and starch where
cc the glucan is produced in the amyloplast or glucan and starch where
cc deficient in starch biosynthesis, transformed with a gene encoding a
cc glucosyltransferase B or D enzyme, wild-type or mutant and a paper
cc comprising the glucan (paper sizing/coating agent). The vector is useful
cc gonditions to produce a regenerated plant and inducing expression of the
cc polynuclectide for a time sufficient to produce the glucan in the
cc ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and
cc chlorophyll AB binding protein to produce a transgenic plant, and glucan
is produced in the amyloplast of potato or the vacuole of sugar best.
cc glucans are useful as substitutes for and additions to modified starch
cc and latexes in paper manufacture. Unlike prior art techniques, which
cr require input materials that produce dby GTF, which utilises
biologically produced input materials, is more cost-effective and
cc properties and impart gloss to the paper during coating step.
cc biologically presents exquence is not shown in the specification but
was created by the indexer using the GTFB sequence appearing as AAU98027
and the information in claim 36. (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571X, D57TN/D571X, D567T/D571X, D5 invention an isolated protein comprising 1475 AA; a glucosyltransferase on from I448V, D457N, or its complementary inked to

멂 Š Matches Query Match Best Local : Sequence 481 18; ب Similarity ANDHLSILEAWSDNDTPYLHD 501 ANNHYSIVEAWSDNDTPYLHD Conservative 90.8%; ω --Score 108; DB 23; Pred. No. 2.7e-07; 3; Mismatches 0; 21 Length 1475; Indels 0; Gaps 0

RESULT 11
AAU98037
ID AAU98
XX AAU98
AC AAU98
XX 27-AU
DT 27-AU
XX Gluco
XX Gluco
XX coati
KW coati
KW amylo
XX Strep
OS Synth AAU98037 standard; Protein; 1475 AA

AAU98037;

27-AUG-2002

(first entry)

glucosyltransferase GTFB mutant D567T/D571K/K1014T

Glucosyltransferase; coating composition; amyloplast; vacuole; GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule; paper manufacture; mutant; mutein.

Streptococcus Synthetic.

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CG (GTF) B polypeptide having changes at position from IA44V, D457N, CC D567T, K10.4T, D457N/D567T, D457N/D57TK, D567T/D57TK, D567TK, D
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        07-JUN-
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07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14-MAR-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     paper manufacture, comprises mutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2000US-0740274
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98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98US-0210361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1014
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9505-0482711
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note= "Wild-type Asp substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        note=
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    substituted by Thr"
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RESULT 12
AAU98038
ID 98038
ID 98038
AC AAU9
AC AAU9
XX Gluc
KW Gluc
KW Coatt
KW Coatt
KW amyl
XX Stre
OS Synt
XX Synt
YH Key
FT Misc

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Best Local S
Matches 18
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S. mutans GTFB mutant I448V/D457N/D567T/D571K/K779Q/K1014T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAU98038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        amyloplast;
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                                                                                                                                                                                                                                                                                                                                      07-JUN-1995;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Misc-difference
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14-MAR-2002.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       19-DEC-2000;
                                                                                                                             Glucosyltransferase B or D protein useful as substitutes for and additions to modifi
                                                                                                                                                                                                                           Nichols
                                                                                                                                                                                                                                                                                                                                                                             07-JUN-1995;
                                                                                                                                                                                        WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                 (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           481
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                                                                            ,
96
                                                                                                               manufacture, comprises mutations
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             composition;
                                                                                                                                                                                                                             ΒS
                                                                                                                                                                                                                                                                 NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              standard; Protein; 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ANDHLSILEAWSDNDTPYLHD 501
                                                                          Page -;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            vacuole;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                         2000US-0740274
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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779
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            note=
                                                                          44pp; English
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       . 7%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Wild-type Lys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Wild-type Lys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Wild-type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Wild-type
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Wild-type Ile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 108;
Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                 in useful for producing a glucan useful to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Asp
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2.7e-07;
                                                                                                                     specific
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
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                                                                                                                       positions
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gln"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lув"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       molecule;
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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,

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CC V169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having CC changes at positions from T589D, T589F, M971D M971D/T589D, and CM97D/T589E. Also included are a glucan produced by the GTF mutant, CC an isolated polymuclectide which encodes P1 or P2, or its complementary CC polymuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polymucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC vector, a produced in the amyloplast and/or vacuole or a maize line CC plucan is produced in the amyloplast and/or vacuole or a maize line CC plucan is produced in the amyloplast and/or vacuole or a maize line CC plant cell with the vector, growing the plant cell under plant sprowing CC conditions to produce a regenerated plant and inducing expression of the CC regenerated plant, where the vector contains a transit sequence from CC plucans are useful as substitutes for and additions to modified starch CC glucans are useful as substitutes for and additions to modified starch CC glucans are useful as substitutes for and additions to modified starch CC glucans are useful as substitutes for and additions to modified starch CC environmentally friendly. Moreover, glucans also exhibit thermoplastic CC properties and impart gloss to the paper during coating step.

CC manifacture utilising the glucan produce the plant and other to produce of the present sequence represents a GTFB mutant of the invention.
RESULT 13
AAU9839
ID AAU988
XX AAU98
XX AAU98
XX Z7-AU
DT 27-AU
CXX Glucc
KW coati
KW coati
KW amyl
XX Streg
OS Streg
OS Synti
XX Key
FT Misc-
FT
XX WS200
XX WS200
XX US200
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Best Local
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                                                                                                                                        Key
Misc-difference
                                                                                                                                                                                                                              Synthetic
                                                                                                                                                                                                                                                        Streptococcus mutans
                                                                                                                                                                                                                                                                                                      amyloplast;
                                                                                                                                                                                                                                                                                                                                   coating composition;
                                                                                                                                                                                                                                                                                                                                                            Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                                                                                      S. mutans glucosyltransferase GTFB mutant YYY169-171AAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAU98039 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              created by the indexer using the GTFB sequence appearing the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
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                                                                                                                                                                                                                                                                                                           vacuole;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                   Location/Qualifiers 169..171
                                                                                                     /note= "Wild-type Tyr-Tyr-Tyr substituted by Ala-Ala-Ala"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             90.8%;
                                                                                                                                                                                                                                                                                                                                 GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
                                                                                                                                                                                                                                                                                                         paper
                                                                                                                                                                                                                                                                                                              manufacture; mutant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1475
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Pred. No. 2.7e-07;
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                                                                                                                                                                                                                                                                                                                                              molecule;
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as AAU98027
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14-MAR-2002

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Query Match Best Local Matches

l Similarity

90.8%;

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Mismatches

Indels

0;

Gaps

0;

ANNHUSIVEAWSDNDTPYLHD 21 ANDHLSILEAWSDNDTPYLHD

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CC (GTF) B polypeptide having changes at position from I448V, D457N, CC D567T/D571KX, D457N/D567T, D457N/D571KX, D567T/D571KX, D567T/D571KX, CC D567T/D571KX, D457N/D567T/D571KX, CC D567T/D571KX, CC D567T/D571KX
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07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16-JAN-1998;
16-JAN-1998;
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                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      substitutes for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  manufacture, comprises mutations in specific positions
                                                     1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000US-0740274
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95US-0478704
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98US-0008172
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95US-0485243
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Score 108; DB 23;
Pred. No. 2.7e-07;
                 Length 1475;
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RESULT 14
AAU98040
                              The invention an isolated protein comprising a glucosyltransferase CC (GTF) B polypeptide having changes at position from I448V, D457N, D567T, D571K, T067T,D571K, D567T,D571K, D567T,D571K, D567T,D571K, D567T,D571K, T067T,D571K, T067T,D571K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11-DEC-1998;
07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27-AUG-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nichols SE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 36; Page -; 44pp; English.
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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                          vector contains a transit
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch glucans are useful as substitutes for and additions to modified starch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ribulose biphosphate carboxylase small subunit, waxy,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Streptococcus mutans monoclonal antibody-related protein #1
                                                                      The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-1756) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyl transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This transferase-B and is used in the immunotherapy of dental caries.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Antibody; dental caries; water insoluble glucan synthetase; anti-caries; glucosyl transferase-B; immunotherapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13-AUG-2002
                                                                                                                                                                                                                                                                                Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        04-OCT-2000; 2000JP-0304889
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                                                                                                                                                                                                                                                 Claim
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                                                          represents a
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                                                          Streptococcus mutans monoclonal antibody-related
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Pred. No. 2.7e-07;
3; Mismatches 0;
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Query Match

Sequence

1476

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Score 108;

В 23;

Length 1476;

				Search completed: November 13, 2003, 09:38:27 Job time : 39.5166 secs	Qy 1 ANNHYSIVEAWSDNDTEYLHD 21 : : : : : :	Best Local Similarity 85.7%; Pred. No. 2.7e-07; Matches 18; Conservative 3; Mismatches 0;
						Indels
						0; Gaps
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
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45
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154.898 Million cell updates/sec
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Gapop 10.0 ,
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119
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1: pir1:*
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1365
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D82220
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S22737
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T30857
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C64233
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                                              E86362
T02748
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pyruvate, phosphat
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ALIGNMENTS

A38175
glucosyltransferase precursor - Streptococcus sobrinus
C;Species: Streptococcus sobrinus
C;Species: 28-Aug-1992 #sequence_revision 28-Aug-1992 #text_change 15-Oct-1999
C;Accession: A38175
C;Accession: A38175
C;Accession: A38175

RESULT 1

J. Bacteriol. 173, 989-996, 1991
A;Title: Peptide sequences for sucrose splitting and glucan binding within Streptococcus
A;Reference number: A38175; MUID:91123227; PMID:1704006

A; Status: preliminary A; Accession: A38175 R;Abo, H.; Mtsumura, T.; Kodama, T.; Ohta, H.; Fukui, K.; Kato, K.; Kagawa, H.

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A;Molecule type: DNA
A;Residues: 1-1592 <ABO>
A;Cross-references: GB:D90213; NID:g217032; PIDN:BAA14241.1; PID:d1014946; PID:g217033
A;Cross-references: GB:D90213; NID:g217032; PID:d1014946; PID:g217032; PID:d1014946; PID:g217033; PID:d1014946; PID:d1014946; PID:g217033; PID:d1014946; PID:d1014946; PID:g217032; PID:d1014946; PID:d1014946;
                                                                                                                                                                                                                                                                                                                                                        C/Species: Streptococcus mutans
C/Species: Streptococcus mutans
C/Date: 23-Oct-1990 #sequence revision 23-Oct-1990 #text_change 15-Oct-1999
C/Accession: B33135; A33128
R/Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the 9tfB gene from Streptococcus mutans.
A;Reference number: A33135; MUID:87308013; PMID:3040685
A;Accession: B33135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
B33135
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C;Species: Streptococcus mutans
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                                       A;Molecule type: DNA
A;Residues: 1-1475 <SHI>
A;Cross-references: GB:MI7361; NID:g153639; PIDN:AAA88588.1;
A;Cross-references: GB:MI7361; NID:g153639; PIDN:AAA88588.1;
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
submitted to the Protein Sequence Database, September 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
A; Reference number: A33128
                                                                                                                                                                                                                                                                                                           A; Status: preliminary
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Best Local Similarity
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Pred. No. 5.6e-10;
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A;Molecule type: DNA
A;Molecule type: DNA
A;Residues: 1-71,173-641,'N',643-1475 <SH2>
A;Experimental source: strain GS-5
A;Experfamily: cpl repeat homology <CP1>
F;1096-1115/Domain: cpl repeat homology <CP1>
F;1224-1243/Domain: cpl repeat homology <CP2>
F;1289-1308/Domain: cpl repeat homology <CP3>
F;1354-1373/Domain: cpl repeat homology <CP4>
F;1419-1438/Domain: cpl repeat homology <CP4>
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A;Status: preliminary; not compared with conceptual translation
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A;Residues: 1-1375 <UED>
A;Residues: 1-1375 <UED>
A;Residues: 1-1375 <UED>
A;Residues: 1-1375 <UED>
A;Resperimental source: GS-5
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Bacteriol. 169, 4263-4270, 1987
A;Fitle: Sequence analysis of the gftB gene
A;Reference number: A33135; MUID:87308013; P
A;Accession: C33135
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Title: Sequence analysis of the gtfC gene from Streptococcus mutans GS-5
A;Reference number: JT0345; MUID:89137980; PMID:2976010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C;Accession: JT0345; C33135
R;Ueda, S.; Shiroza, T.; Kuramitsu, H.K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gene 69,
A45866 dextransucrase (EC 2.4.1.5) precursor - C;Species: Streptococcus mutans C;Date: 30-Sep-1993 #sequence_revision 3 C;Accession: A45866 R;Honda, O.; Kato, C.; Kuramitsu, H.K.
                                                                                                                                                                                                                                                                                                                                                                                                                   A;Description: catalyzes the synthesis of both water-soluble and water-insoluble glucans C;Superfamily: cpl repeat homology C;Keywords: duplication; glycosyltransferase; hexosyltransferase C;Keywords: duplication; glycosyltransferase; hexosyltransferase F;1-34/Domain; signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Gene: gtfC
C; Function:
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C;Genetics:
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                                                                                                                                                                                                                                                                                                                                            F;1126-1145/Domain: cpl
F;1253-1272/Domain: cpl
F;1318-1337/Domain: cpl
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                                                                                                                       RESULT 4
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Best Local &
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Molecule type: DNA
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                                                                                                                                                                                                                                                                                                      Query Match
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17; Conserv
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                                                                                                                                                                                                                                                                                                                                              repeat homology <CP3>
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81.0%;
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homology <CP2>
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Pred. No. 2.6e-08;
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                                                                                                                                                                                                                                                                   Pred. No. 6.10
3; Mismatches
                                                                                                                                                                                                                                                                                                          Score 99;
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                                             30-Sep-1993
                                                                                     Streptococcus
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PMID:3040685
                                                                                                                                                                                                                                                                                        6.1e-07;
                                                                                                                                                                                                                                                                                                             DB 2;
                                           #text_change 07-May-1999
                                                                                                                                                                                                                                                                                                             Length 1375;
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A; Residues: 1-1431 <HON>
A; Residues: 1-1431 <HON>
A; Cross references: GB: M9296
C; Superfamily: cpl repeat homology
C; Superfamily: cpl repeat homology <CP1>
F; 181-201/Domain: cpl repeat homology <CP2>
F; 1127-1146/Domain: cpl repeat homology <CP3>
F; 1127-1211/Domain: cpl repeat homology <CP3>
F; 1127-1276/Domain: cpl repeat homology <CP4>
F; 1257-1276/Domain: cpl repeat homology <CP4>
F; 1277-1397/Domain: cpl repeat homology <CP5>
F; 1341-1340/Domain: cpl repeat homology <CP6>
F; 1341-1361/Domain: cpl repeat homology <CP6>
F; 1341-1361/Domain: cpl repeat homology <CP6>
F; 1341-1361/Domain: cpl repeat homology <CP6>
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A;Title: Nucleotide sequence of the Streptococcus mutans gtfD gene encoding the glucosyl A;Reference number: A45866; MUID:91100958; PMID:2148600
A;Accession: A45866
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R;Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, R.M. FEMS Microbiol. Lett. 159, 307-315, 1998
A;Title: Cloning and sequencing of a gene coding for an extra A;Reference number: Z20981; MUID:98164374; PMID:9503626
A;Accession: T31098
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A;Residues: 1-1508 <MON>
A;Cross-references: EMBL:AF030129; NID:g2766611; PID:g2766612; PIDN:AAB95453.1
A;Experimental source: strain NRRL B-1299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        probable dextransucrase (BC 2.4.1.5), extracellular - Leuconostoc mesenteroides C_fSpecies: Leuconostoc mesenteroides
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C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change
                                                                                                                                  glucosyltransferase (BC 2.4.1.-) gtfS precursor - Streptococcus C;Species: Streptococcus sobrinus C;Date: 30-Jun-1992 #text_change C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change C;Accession: A41483 R;Gilmore, K.S.; Russell, R.R.B.; Ferretti, J.J. Infect. Immun. 58, 2452-2458, 1990
                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Description: produces dextran composed only of alpha(1-6)C;Keywords: glycosyltransferase; hexosyltransferase
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A; Molecule type: DNA
A; Residues: 1-1365 <GIL>
A; Cross-references: GB:M'
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                                                                                                  Infect. Immun. 58, 2452-2458, 1990
A;Title: Analysis of the Streptococcus downei gtfS gene, A;Reference number: A41483; MUID:90316665; PMID:2142479
                                                                    A; Reference number: A41483; A; Accession: A41483
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nilarity 57.1%;
Conservative
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  GB:M30943; NID:g153652; PIDN:AAA26898.1; PID:g153653
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Pred. No.
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C;Genetics:
A;Gene: gtfS
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
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R; Simpson, C.L.; Giffard, P
Infect. Immun. 63, 609-621;
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C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999
C;Accession: T30857
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T30857
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C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999
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glucosyltransferase - Streptococcus salivarius
C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999
                                            T30858
                                                                                                                                                                                                                                              A;Cross-references: EMBL:AF049609; NID:g2935545; PID:g2935546; PIDN:AAC05156.1
C;Genetics:
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                                                                                                                                                                                                                                                                                                                       A; Reference number:
A; Accession: T30552
                                                                                                                                                                                                                                                                                                                                         A;Description: Streptococcus
A;Reference number: Z20854
                                                                                                                                                                                                                                                                                                                                                    R;Jaffe, K.1.
submitted to the EMBL Data Library, February 1998
a.Description: Streptococcus salivarius V1477 gtfl
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                                                              RESULT 9
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Best Local :
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Best Local Similarity
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nilarity 57.1%;
Conservative
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57.1%;
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Pred. No. 0.
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Pred. No.
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      #text_change 22-Oct-1999
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C;Species: Streptococcus salivarius
C;Date: 31-Dec-1993 #sequence revision 31-Dec-1993 #text_change 1
C;Accession: A44811; S22726; S28809
C;Accession: A44811; S22726; S28809
C;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
U. Gen. Microbiol. 137, 2577-2593, 1991
A;Ritle: Molecular characterization of a cluster of at least two A;Reference number: A44811; MUID:92148377; PMID:1838391
A;Accession: A44811
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A;Title: Streptococcus salivarius ATCC 25975 possesses a
A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Accession: T30858
                  A;AcCession. A;AcCession. A;AcCession. A;AcCession. A;Molecule type: DNA A;Residues: 1-1599 <JAC> A;Residues: 1-1599 <JAC> A;Residues: 1-1599 <JAC> A;Cross-references: EMBL:Z11872; NID:g47530; PIDN:CAA77898.1; A;Cross-references: A;Cross-
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R;Simpson, C.L.;
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A;Residues: 1-1577 <SIM>
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A; Residues: 1-1518 <GIF>
A; Residues: 1-1518 <GIF>
A; Cross-references: EMBL: Z11873; NID: g47526; PIDN: CAA77900.1; PID: g47527
A; Note: sequence extracted from NCBI backbone (NCBIN: 81050, NCBIP: 81052)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
F;1307-1326/Domain: cpl repeat homology <CP4>
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submitted to the EMBL Data Library, March 1992
A;Reference number: S22726
A;Accession: S22737
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A; Accession: S28810
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9; Conserva
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Pred. No.
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Pred. No. 3.4;
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;Molecule type: DNA ;Residues: 1-51 <GIF>

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R;Theologis, A; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Kaul, S.; White, O.; Alonso, Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Creasy, T.E.; Dewar, K.; ansen, N.F.; Hughes, B.; Huizar, L.

Nature 408, 816-820, 2000

A;Authors: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykir, E.; Kim, C. A.; Li, J.H.; Li, Y.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Marziali, C.A.; Li, J.H.; Li, Y.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Marziali, Rizzo, M.; Rooney, T.; Rowley, D.; Sakano, H.

A;Authors: Sallberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon, ker, M.; Wu, D.; Yu, G.; Fraser, C.M.; Venter, J.C.; Davis, R.W.

A;Reference number: A86141; MUID:21016719; PMID:11130712
A; Molecule type: DNA
A; Molecule type: DNA
A; Molecule type: daNa\sigma
A; Molecules: 1-336 < HBAN\sigma
A; Residues: 1-336 < HBAN\sigma
A; Cross-references: EMBL: V01555; NID:g59074; PIDN: CAA24831.1; PID:g1334895
A; Cross-references: EMBL: V01555; NID:g59074; PIDN: CAA24831.1; PID:g1334895
A; Cross-references: EMBL: V01555; NID:g59074; PIDN: GENT P.L.; Farrell, P.J.; Gib
R; Baerr, R.; Bankier, A.T.; Higgin, M.D.; Deininger, P.L.; Farrell, P.J.; Gib
Nature 310, 207-211, 1984
A; Title: DNA sequence and expression of the B95-8 Epstein-Barr virus genome.
A; Title: DNA sequence and expression of colored sequence is given
A; Contents: annotation; protein coding region
A; Note: neither amino acid nor nucleotide sequence is given
A; Note: neither amino acid nor nucleotide sequence is given
A; Note: neither amino acid nor nucleotide sequence is given
A; Note: neither amino acid nor nucleotide sequence is given
A; Chen, M.R.; Hsu, T.Y.; Lin, S.W.; Chen, J.Y.; Yang, C.S.
J. Gen. Virol. 72, 3047-3055, 1991
J. Gen. Virol. 72, 3047-3055, 1991
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C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 31-Mar-2001
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C;Keywords: glycosyltransferase; hexosyltransferase
F;1456-1475/Domain: cpl repeat homology <CPR>
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C;Genetics:
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                                                                                                                                                                                                                                                                                                                                                                          C;Species: human herpesvirus 4, Epstein-Barr virus C;Date: 25-Feb-1985 #sequence revision 25-Feb-1985 #text_change 16-Jul-1999 C;Date: 25-Feb-1985 #sequence revision 25-Feb-1985 #text_change 16-Jul-1999 C;Accession: C43044; JQ1381; Ā03794; S3036 R;Bankler, A.T.; Deininger, P.L.; Farrell, P.J.; Barrell, B.G. Mol. Biol. Med. 1, 21-45, 1983 A;Title: Sequence analysis of the 17,166 bp EcoRI fragment C of B95-8 Epste. A;Reference number: A93065; MUID:85035713; PMID:6092825 A;Accession: C43044 A;Accession: C43044 A;Accession: C43044
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A;Residues: 1-175 <STO>
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8; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    human herpesvirus 4 (strain B95-8)
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                   and characterization of cDNA clones corresponding to transcripts
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Pred. No. 5.2;
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Pred. No. 0.78;
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A;Reference number: JQ1381; MUID:92113548; PMID:1662696
A;Accession: JQ1381
A;Molecule type: mRNA
A;Residues: 1-336 <CHE>
A;Cross references: GB:577132; NID:g243314; PIDN:AAB21113.1; PID:g243315
C;Superfamily: Epstein-Barr virus BGLF2 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           R;Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sell 1, R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
A;Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae.
A;Reference number: A82035; MUID:20406833; PMID:10952301
A;Accession: D82220
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C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 02-Feb-2001
C;Accession: D82220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Nolecule type: DNA
A;Molecule type: DNA
A;Residues: 1-524 <HEI>
A;Cross-references: GB:AE004206; GB:AE003852; NID:g9655749; PIDN:AAF94427.1;
A;Cross-references: GB:COMPTON OI; Strain NI6961; biotype El Tor
                                                                                                                                                                                                                                 conserved hypothetical protein VC1268 [imported] - Vibrio cholerae
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                                                                                                                               A;Cross-references: EMBL:X65220; NID:g9552; PIDN:CAA46323.1; PID:g9553 C;Superfamily: glyceraldehyde-3-phosphate dehydrogenase C;Keywords: oxidoreductase
                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-331 <HAN>
                                                                                                                                                                                                                      A; Status: preliminary
                                                                 Matches
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Pred. No.
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4; Mismatches
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H.; Dragoi, I.; Sellers,
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Search completed: November 13, 2003, 09:50:26 Job time : 14.0379 secs

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130.561 Million cell updates/sec
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Copyright (c) 1993 - 2003 Compugen Ltd.
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G6PD_ECOLI
SC35_TYEAST
G3PC_TRYBB
Y943_MYCTU
HGD_STRCO
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AMP2_STRCO
DOPO HUMAN
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PSF1_DROME
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P29336 streptococc
P3221 epstein-bar
Q01558 leishmania
Q03695 saccharoma
Q92093 mus musculu
P53280 saccharomyc
P53015 caenorhabdi
Q62059 mus musculu
P22992 escherichia
                      Q9a5b8
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P11001 streptococc
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34.5	34.5	34.5	34.5	34.5	34.9	34.9	34.9	34.9	35.3	35.3	35.3
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ALIGNMENTS

PT V KW	CGGCGGGGCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	RESULT GTF2 S
EMBL; D90213; BAA14241.1; InterPor; IPR002479; CW_binding. InterPor; IPR002479; CW_binding. InterPor; IPR003318; Glyco hydro 70. Pfam; PF01473; CW_binding_I; 13. Pfam; PF02324; Glyco hydro 70; 1. Transferase; Glycosyltransferase; Signal; Repeat; Dental caries. SIGNAL 1 POTENTIAL. SIGNAL 39 1592 GLUCOSYLTRANSFERASE-I. CHAIN 39 1044 CATALYTIC (APPROXIMATE).	PGTF2 STRDO P27470; 01-AUG-1992 (Re 01-AUG-1992 (Re 15-SEP-2003 (Re Glucosyltransfs Streptcococus Bacteria; Firmi SEQUUNCE FROM 1 STRAIN=6715 / STRAIN	STRDO

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Best Local :
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01-JUL-1989 (Rel. 11, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus
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                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=87308014; PubMed=3040686;
Ferretti J.J., Gilpin M.L., Russell R.R.B.;
"Nucleotide sequence of a glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
           InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW_binding 1; 16.
Pfam; PF02324; Glyco hydro 70; 1.
Transferase; Glycosyltransferase; Signal;
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                                                                                                                      use by non-profit institutions as 1049 where by and fo modified and this statement is not removed. Usage by and fo modified and this statement agreement (See http://www.isb-sib-
                                                                                                                                                  the European Bioinformatics Institute. The European Bioinformatics Institutions as long use by non-profit institutions as long
                                                                              EMBL; M17391; AAC63063.1;
                                                                                                         or send
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  SIGNAL
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Bacteriol. 169:4271-4278 (1987).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOU FUNCTION: PRODUCTION OF EXTRACES OF THE DEVELOPMENT OF THE DENTAL PLAÇUE BOTH SURFACES AND MEDIATE THE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + { (1,6) - alpha-D-glucosyl} (N) =
                                                                                                                                                                                                              FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 19 cell wall binding repeats.
                                                                                                                                                                                                                                                                  MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES B
                                                                                                                                                                                                                                                                                                          fructose + {(1,6)-alpha-D-glucosyl}(N+1)
SUBCELLULAR LOCATION: Secreted.
DISEASE: DENTAL CARIES.
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                                                                                                                                                             SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the EV European Bioinformatics Institute. There are treatment
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                                                                                                         s requires a license agreement (S an email to license@isb-sib.ch).
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micutes; Lactobacillales; Streptococcaceae;
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Pred. No. 1.1e-10;
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Shiroza T., Ueda S., Kuramitsu H.K.;
"Sequence analysis of the gtfB gene:
J. Bacteriol. 169:4263-4270(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Streptococcus mutans.
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                                                                                                                                                                                                                                                                                                                                                                                                                               MT4467 / Serotype E, and MT8148 / MEDLINE=98231643; PubMed=9570124;
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                                                                                                                                                                                                                                                        STRAIN=UA159 / AT(
MEDLINE=22295063;
                                                                                                                                                                                                                                                                                                                                        Streptococcus mutans."; FEMS Microbiol. Lett. 161:331-336(1998).
                                                                                                                                                                                                                                                                                                                                                                                            Fujiwara T., Terao Y.
Kimura S., Hamada S.;
                                                                                                                                                                     pathogen.
                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                       Molecular analyses of glucosyltransferase
     + +
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                                                                                                                                                   Proc.
PRODUCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGH FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGH FULLY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BEC. OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.
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pe E, and MT8148 / S
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PubMed=12397186;
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1.25 A, 2 B, A
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CATALYTIC (APPROXIMAT
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Pred. No. 1.1e-10;
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Serotype C;
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SIMILARITY: Contains 10 cell wall binding repeats.
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MEDLINE-87308013; PubMed=3040685; Shiroza T., Ueda S., Kuramitsu H.K.; Shiroza T., Ueda S., Kuramitsu H.K.; "Sequence analysis of the gtfB gene from Streptococcus mutans."; J. Bacteriol. 169:4263-4270(1987).
-!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGH.
                                                                                                      STRAIN-UALS9 / ATCC 700610 / Serotype C;
MEDLINE=22295063; PubMed=12397186;
Ajdic D., McShan W., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Ferretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
"Genome sequence of Streptococcus mutans UA159, a cariogenic c
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Addic D
                                                                                                                                                                                           "Molecular analyses of glucosyltransferase genes
Streptococcus mutans.";
FEMS Microbiol. Lett. 161:331-336(1998).
                                                                                                                                                                                                                                              MT4467 / Serotype E, and MT8148 ./
MEDLINE=98231643; PubMed=9570124;
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Kimura S., Hamada S.;
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the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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fructose + { (1,6)-alpha-D-glucosyl} (N) =
SUBCELLULAR LOXATION: Secreted.
DISEASE: DENTAL CARIES.
MISCELLANBOUS: One
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 5 cell wall binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE) FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               M2054; AAA88592.1; -.

D88652; BAA26102.1; -.

D88655; BAA26106.1; -.

D88659; BAA26110.1; -.

D88659; BAA26114.1; -.

D89978; BAA26120.1; -.

AE011940; AAN58706.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SWISS-PROT entry is copyright. It is produced through a collaboration en the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE (
,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S (
ATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               M17361; AAA88589.1; -.
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1126
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150
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425
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538
545
597
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                                                                                                                                                                                                                                                                         GLUCOSYLTRANSFERASE-SI.
CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
2.4 A. 1 C AND 1 AC REPEATS.
A REPEAT.
A REPEAT.
C REPEAT.
C REPEAT.
C REPEAT.
AC REPEAT (IN COMPLETE).
A REPEAT (IN STRAIN GS-5).
V -> I (IN STRAIN GS-5).
D -> V (IN STRAIN GS-5).
S -> A (IN STRAIN GS-5).
S -> PK (IN STRAINS GS-5 AND MT4
A -> V (IN STRAINS GS-5 AND MT4
A -> V (IN STRAINS GS-5 AND MT4
CSR -> PK (IN STRAINS GS-5 AND MT4
A -> V (IN STRAINS GS-5 AND MT4
CSR -> V (IN STRAINS GS-5 AND MT4
CSR -> V (IN STRAINS GS-5 AND MT4
CSR -> V (IN STRAINS MT4245 AND MT4
CSR -> V (IN STRAINS MT4245, MT42
CONTROL AND MT4
                                                                AND MT8148)
R -> K (N)
AND MT8148)
A -> T (IN
M -> T (I
                                V AND
                                                                                                                                                                                                                                                                                                                                                                                                                 EAT (INCOMPLETE).

I (IN STRAIN GS-5).

L (IN STRAIN GS-5).

V (IN STRAIN GS-5).

A (IN STRAINS GS-5 AND MT4467).

T (IN STRAIN GS-5).

PK (IN STRAINS GS-5, MT4239 AND.
                                                                    STRAIN (
STRAIN )
STRAIN 1
STRAIN 1
STRAIN 1
STRAIN 1
STRAIN 1
STRAIN N
STRAIN N
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                                                                                         GS-5).
GS-5).
MT8148).
MT8148).
MT4239).
MT4239).
MT4239).
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S SYNTHESIZES
SI SYNTHESIZES BC
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5 AND MT4251).
5 AND MT4251).
5, MT4251, MT4
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L outstation -
                                                                           MT4467
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RESULT 5
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ID GTFD_S
AC P49331
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Best Local :
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1949331; 069383; 069389; 069392; 06939.

101-FEB-1996 (Rel. 33, Created)

28-FEB-2003 (Rel. 41, Last sequence update)

15-SEP-2003 (Rel. 42, Last annotation update)

Glucosyltransferase-S precursor (EC 2.4.1.5)

(Sucrose 6-glucosyltransferase).

GTFD OR SMU.910.
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                                                                                                                                                                                                                                                                                                                                                                                                        [2]
SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN=MT4239 / Serotype C, MT4245
STRAIN=MT4239 / Serotype E, and MT8148 / Serotype E, and MT814 / Ser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=91100958; PubMed=2148600;
Honda O., Kato C., Kuramitsu H.K.;
"Nucleotide sequence of the Streptococcus
the glucosyltransferase-S enzyme.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus mutans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                Pujiwara T., Terao Y., Hoshino T., Kawabata
Kimura S., Hamada S.,
"Molecular analyses of glucosyltransferase
streptococcus mutans.";
                                                                                                                                                                                                                                                                                                                                                                                           MT4467 / Serotype E, and MT8148 / MEDLINE=98231643; PubMed=9570124;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                    STRAIN=UA159 / ATCC 700610 / Serotype C;
MEDLINE=22295063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,
Carson M.B., Primeaux C., Tian H., White J., Roe B.A., Ferretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
Ti S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
Ti S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
                                                                                                   pathogen."
                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gen. Microbiol. 136:2099-2105(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TaxID=1309;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      507
    EUNCTION: PRODUCTION OF EXTRACTLULAR GLUCANS, THAT ARE TIFUNCTION: PRODUCTION OF EXTRACTLULAR GLUCANS, THAT PLAÇUI TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAÇUI OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
                                                                                                                                                                                                                                                                                            Microbiol.
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81.0%;
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                                                                                                                                                                                                                                                                                              161:331-336(1998)
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V -> I (IN STRAIN MT8148).
D -> N (IN STRAIN MT4239).
U -> I (IN STRAIN MT4239).
V -> I (IN STRAIN MT4239).
V -> I (IN STRAIN MT4239 AND MT8148).
S -> P (IN STRAIN MT8148).
S -> P (IN STRAIN MT8148).
TSGGNMYYFGUNGYALIGHHVVEGERRVYEDENGVERYASHD QRNHWDYDYERDFGRGSSSAVRFRHSRNGFFDNFFRF -> PHAGILSLMVFRLESSLOSVKVVSNTMILIPEMKFVIVM
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T -> A (IN STRAINS GS-5,
AND MT8148).
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MT8148)
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                                                                                                                                                                                                                                                                                                                                                                                                                         serotype C;
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EMBL; M29296; AAA26895.1; -.

R EMBL; D88653; BAA26103.1; -.

R EMBL; D88656; BAA26107.1; -.

R EMBL; D88659; BAA26111.1; -.

R EMBL; D88662; BAA26111.1; -.

R EMBL; D8979; BAA26121.1; -.

R EMBL; D8979; BAA26121.1; -.

R EMBL; D8979; BAA26121.1; -.

R EMBL; AE014932; AAN58619.1; -.

R InterPro; IPR002479; CW binding.

R InterPro; IPR002479; CW binding.

R InterPro; IPR00318; Glyco hydro 70.

R Pfam; PF02324; Glyco hydro 70; 1.

R Pfam; PF02324; Glyco hydro 70; 1.

R Pfam; PF02324; Glyco hydro 70; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                             Complete
SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the European Bioinformatics Institute. There are no rest
use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by an
entities requires a license agreement (See http://www.isb-
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DISEASE: DENTAL CARIES.

MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE G

1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S S

WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FORMS OF GLUCANS SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-BINDING PROME S.MUTANS.
SIMILARITY: Contains 6 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CATALYTIC ACTIVITY: Sucrose + \{(1,6)-alpha-D-glucosyl\}(N) fructose + \{(1,6)-alpha-D-glucosyl\}(N+1).
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1, MT4467 AND MT8148).

Y (IN STRAIN MT4251).

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I (IN STRAINS MT4239 AND M

C (IN STRAIN MT4239).

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(IN STRAINS MT4239, MT42
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(IN STRAIN MT4245).
(IN STRAINS GS-5, MT4.
(IN STRAINS GS-5, MT4.),
MT4467 AND MT8148).
(IN STRAIN MT848).
(IN STRAINS MT4239).
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A Gilmore K.S., Russell R.R., Ferretti J.J.;

A GILMORE GILMORN GILMORN GILMORNS, THAT ARE THOUGHT

C I FUNCTION FERDULCTION OF EXTENCELLULAR GLUCANS, THAT ARE THOUGHT

C OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE

C AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS

C AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS

C I CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-CLUCAN GILMORN GILMORN GILMORN) {(1,6)-alpha-D-glucosyl}(N+1).

C I ENZYME REGULATION: GLUCAN SYNTHESIS BY GTF-S IS INDEPENDENT OF CLUCAN GILMORN GIL
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P29336;
01-DEC-1992 (Rel. 24, Created)
01-DEC-1992 (Rel. 24, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Glucosyltransferase-S precursor (EC 2.4.1.5)
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                                                                      This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the European Bioinformatics Institute. There are no restruge by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entities requires a license agreement (See http://www.isb-sor send an email to license@isb-sib.ch).
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SIMILARITY: TO OTHER BINDING PROTEIN FROM
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MISCELLANEOUS: GTF-S
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Pfam; PF01473; CW_binding_1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
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                                                                                                                                                                                                                                                                                         MEDITINE=92113548; PubMed=1662696;
Chen M.R., Hsu T.Y., Lin S.W., Chen J.Y., Yang C.S.;
Chening and characterization of cDNA clones corresponding to "Cloning and characterization of cDNA clones corresponding to transcripts from the BamHI G region of the Epstein-Barr virus and expression of BGLF2.";
J. Gen. Virol. 72:3047-3055(1991).
J. Gen. Virol. 72:3047-3055(1991).
J. GEN. LARITY: BELONGS TO FAMILY THAT GROUPS TOGETHER HSV-1 HSV-6 ORF11R, EHV-1 46, HCMV UL94, EBV BDLF2, AND VZV 44.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nature
[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDIINE=84270667; PubMed=6087149; Baer R., Bankier A.T., Biggin M.D., D. Gibson T.J., Hatfulli G., Hudson G.S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=10377;
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                                                                                                                                                           use by non-profit institutions as long modified and this statement is not removed entities requires a license agreement (See
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ige; Herpesviridae;
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Late protein.
SEQUENCE 336 AA; 36888
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Q01558;
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-i- CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + phosphate
-i- CATALYTIC ACTIVITY: D-glyceroyl phosphate + NADH.
-i- PATHWAY: Second phase of glycolysis; first step.
-i- SUBUNIT: Homotetramer.
-i- SUBCELIULAR LOCATION: Cytoplasmic.
-i- SIMILARITY: Belongs to the glyceraldehyde 3-phosphate
-i- SIMILARITY: Belongs to the glyceraldehyde 3-phosphate
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                                                                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Molecular analysis of the cytosolic and glycosomal phosphate dehydrogenase in Leishmania mexicana.";
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Eukaryota; Euglenozoa;
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                                                                                        BINDING
ACT SITE
SEQUENCE
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InterPro; IPR000173; GAP_dhdrogenase.
InterPro; IPR006424; GAPDH-I.
                                                                                                                                                                                                                                                                                                                                                                                                                                        entities requires a license agreement ( or send an email to license@isb-sib.ch)
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TIGRFAMS; TIGR01
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GLYCERALDEHYDE 3-PHOSPHATE.
ACTIVATES THIOL GROUP DURING
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15-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bowman S., Churcher C.M., Badcock K., Brown D., Chillingworth T., Connor R., Dedman K., Devlin K., Gentles S., Hamlin N., Hunt S., Jagels K., Lye G., Moule S., Odell C., Pearson D., Rajandream M.A., Rice P., Skelton J., Walsh S., Whitehead S., Barrell B.G.; "The nucleotide sequence of Saccharomyces cerevisiae chromosome"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
Saccharomycetales; Saccharomycetaceae; Saccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          15-SEP-2003 (Rel. 42, Last annota
Hypothetical 35.0 kDa protein in
YMR206W OR YM8325.07.
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Q03695;
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                                                                                                             Glyceraldehyde 3-phosphate GAPA OR GAP OR MG301.
Mycoplasma ~~~'
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         entities requires a license agreement (Some send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-NOV-1997
        MEDLINE=96026346; PubMed=7569993;
Praser C.M., Gocayne J.D., White O., Adams M.D.,
Fleischmann R.D., Bult C.J., Kerlavage A.R., Sutt
                                              SEQUENCE FROM N.A. STRAIN=ATCC 33530 /
                                                                                                 Mycoplasma genitalium.
Bacteria; Firmicutes; Mollicutes; Mycoplasmataceae; Mycoplasma
                                                                                                                                                  01-FEB-1996 (Rel. 33,
01-FEB-1996 (Rel. 33,
28-FEB-2003 (Rel. 41,
                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                            Hypothetical protein.
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                                                                                  NCBI_TaxID=2097;
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f C.M., GC.
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9; Conserv
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35, Last sequence update)
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149
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                                                G-37;
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47.4%;
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Pred. No.
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POLY-GLN.
POLY-SER.
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SILF_MOUSE
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Best Local
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                                                                                                                                   SILF MOUSE STAND
Q92063;
Q92063;
28-FEB-2003 (Rel. 41
28-FEB-2003 (Rel. 42)
15-SEP-2003 (Rel. 42)
Sialic acid binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a c between the Swiss Institute of Bioinformatics and the EMBL the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and fo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sequencing.";
J. Bacteriol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; U39710; AAC71523.1; -.
EMBL; U02213; AAD12507.1; -.
EMBL; U02178; AAD12463.1; -.
PIR; C64233; C64233.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=94075230; PubMed=8253680;
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STRAIN=ATCC 33530 / G-37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRINTS; PR00078; G3PDHDRGNASE.
TIGREAMS; TIGR01534; GAPDH-I; 1.
PROSITE; PS00071; GAPDH; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pfam; PF00044; gpdh;
Pfam; PF02800; gpdh
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
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InterPro; IPR006424;
                                           Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glycolysis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TIGR; MG301; -
NCBI_TaxID=10090;
                                                                                                                SIGLECF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteriol. 175:7918-7930(1993).

Bacteriol. 175:7918-7930(1993).

CATALYTIC ACTIVITY: D-glyceraldehyde 3-phosphate + phonaphother and the phosphate + NADH.

NAD(+) = 3-phospho-D-glyceroyl phosphate + NADH.

PATHWAY: Second phase of glycolysis; first step.

SUBUNIT: Homotetramer (By similarity).

SUBCELLULAR LOCATION: Cytoplasmic.

SIMILARITY: Belongs to the glyceraldehyde 3-phosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dehydrogenase family.
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ng Ig-like lectin-F precurso
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GIYCERALDEHYDE 3-PHOSPHATE
(BY SIMILARITY).
ACTIVATES THIOL GROUP DURING
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                                                Craniata; Vertebrata; Euteleosto
Sciurognathi; Muridae; Murinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FA1EA1966687006B CRC64;
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SEQUENCE FROM N.A. STRAIN=C57BL/6;

MEDLINE=21576254; PubMed=11579105;

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Best Local 9
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-! SUBCELFULAR LOCATION: Type I membrane protein.

-! TISSUE SPECIFICITY: Predominantly expressed by immature monocytic/myeloid lineage cells in bone marrow. Also found at lower levels in mature neutrophils and monocytes.

-! DOMAIN: Contains an intracycoplasmic motif referred as immunoreceptor tyrosine-based inhibitor motif (ITM). This motif is involved in downmodulation of cellular functions as the termination of the immune response.

-! SIMILARITY: Belongs to the immunoglobulin superfamily. SIGLEC (SIALIC ACID BINDING IG-LIKE LECTIN) SUBSAMILY.

-! SIMILARITY: Contains 1 immunoglobulin-like V-type domains.

-! SIMILARITY: Contains 2 immunoglobulin-like C2-type domains.
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J. Bi
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "Cloning and characterization of a novel mouse Siglec, mSiglec-F: differential evolution of the mouse and human (CD33) Siglec-3-related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Angata T., Hingorani R., Varki N.M., Varki A., "Cloning and characterization of a novel mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL; AF293371; AAL11043.1; -.
InterPro; IPR007110; Ig-11ke.
InterPro; IPR003598; Ig_C2.
InterPro; IPR003006; Ig_MHC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entities requires a license agreement (S or send an email to license@isb-sib.ch).
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DOMAIN
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SMART; SM00408; IGc2; 1.
PROSITE; PS50835; IG_LIKE;
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CARBOHYD
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siol. Chem. 276:45128-45136(2001).
FUNCTION: Putative adhesion molecule that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 dependent binding to cells.
  397
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                                                                                   Similarity
8; Conserv
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      SSNHRLSCEAWSDN
                                                                                                                                                                                                                     569 AA;
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IG-LIKE C2-TYPE
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RESULT 13
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Hypothetical 127.2 k
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01-OCT-1996 (Rel. 34, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Hypothetical 128.8 kDa protein in PAS2-PRS5 i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YPO4 CAEEL
P53015;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the European Bioinformatics Institute. There are no restr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Submitted (MAY-1996) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  van Dyck L.,
Nawrocki A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes; Saccharomycetales; Saccharomycetaceae; Saccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Saccharomyces cerevisiae (Baker's yeast).
          This SWISS-PROT entry is copyright. It is produced through a collaboratic between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it use by non-profit institutions as long as its content is in no was modified and this statement is not removed. Usage by and for commercia entities requires a license agreement (See http://www.isb-sib.ch/announce or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                      Favello A.;
Submitted (NOV-1995) to the EMBL/GenBank/DDBJ databases.
-i- SIMILARITY: TO YEAST PAN2 AND TO S.POMBE SPAC22G7.04.
                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A. STRAIN=Bristol N2;
                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=6239;
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Rhabditidae; Peloderinae;
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34, Last sequence update)
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01-NOV-1997 (Rel. 35, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Versican core protein precursor (Large fibroblast
(Chondroitin sulfate proteoglycan core protein 2)
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Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
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SEQUENCE FROM N.A. (ISOFORMS V0; V1 AND V2).
STRAIN=C57BL/6, and Swiss Webster; TISSUE=Brain;
MEDLINE=95122551; PubMed=7822336;
MEDLINE=95122551; PubMed=7822336;
MEDLINE=95122551; PubMed=7822336;
MEDLINE=9512551; PubMed=7822336; PubMed=7822336; PubMed=7822336; PubMed=7822336; PubMed=7822336; PubMed=7822336; PubMed=7822336; PubMed=7822336; PubMed=782
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Zako M., Shinomura T., Ujita M., Ito K., Kimata K.;
"Expression of PG-M(Y3), an alternatively spliced form of PG-M
without a chondroitin sulfate attachment in region in mouse and
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"Functional annotation of a
Nature 409:685-690(2001).
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                                                             full-length mouse cDNA collection.";
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PRINTS; PRO1265; LINKYDDULE.
ProDom; PRO1265; LINK; 2.
SMART; SM00032; CCF; 1.
SMART; SM00034; CLECT; 1.
SMART; SM00034; CLECT; 1.
SMART; SM00409; IG; 1.
SMART; SM00445; LINK; 2.
SMART; SM00445; LINK; 2.
PROSITE; PS00010; ASX HYDROXYL; 1.
PROSITE; PS00615; C_TYPE_LECTIN_1; 1.
PROSITE; PS00041; C_TYPE_LECTIN_2; 1.
PROSITE; PS00022; EGF_1; 2.

Pfam; PF00047; ig; 1.

Pfam; PF00059; lectin_c; 1.

Pfam; PF00084; sushi; 1.

Pfam; PF00193; Xlink; 2.

Sushi_SCR_CCP.

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InterPro; IPR001881; EGF_Ca.
InterPro; IPR006209; EGF like.
InterPro; IPR007110; Ig_Tike.
InterPro; IPR003599; Ig_MHC.
InterPro; IPR003006; Ig_MHC.
InterPro; IPR001304; Lectin_C.
InterPro; IPR0005389; Link.
InterPro; IPR0005389; Link.
InterPro; IPR000436; Sushi_SCR_C
Pfam; PF00008; EGF; 2.
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HSSP; P01132; 1EP
MGD; MGI:102889;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             between the Swiss Institute of Bioinformatics and the Ithe European Bioinformatics Institute. There are no rest use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an entities requires a license agreement (See http://www.isb-or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PubMed=10400671;
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INTERACTION WITH FBLN1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced the SWISS Institute of Bioinformatics and the EMBL outstation between the Swiss Institute of Bioinformatics are no restrictions on 10 miles of the swiss in the sw
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EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
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SUBCELLULAR LOCATION: Secreted; extracellular matrix.
ALTERNATIVE PRODUCTS:
Event_Alternative splicing; Named isoforms=4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FUNCTION: May play a role in intercellular signaling and connecting cells with the extracellular matrix. May take the regulation of cell motility, growth and differentiat
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D28599; -; NOT ANNOTATED_CDS.
D32040; BAA06802.1; -.
AK014525; BAB29411.1; -.
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"Molecular characterization of the Escherichic encoding glucose 6-phosphate dehydrogenase.";

J. Bacteriol. 173:968-977(1991).
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MEDLINE=97426617; PubMed=9278503;
Blattner F.R.; Plunkett G. III, Bloch C.A., Perna N.T., Burland Riley M., Collado-vides J., Glasner J.D., Rode C.K., Mayhew G.F. Gregor J., Davis N.W., Kirkpatrick H.A., Goeden M.A., Rose D.J., Man B., Shao Y.;
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Escherichia coli 06
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Itch T., Aiba H., Baba T., Fujita K., Hayashi K., Inada T.,
Isono K., Kasai H., Kimura S., Kitakawa M., Kitagawa M.,
Makino K., Miki T., Mizobuchi K., Mori H., Mori T., Motomura K.,
Nakade S., Nakamura Y., Nashimoto H., Nishio Y., Oshima T.,
Saito N., Sampei G., Seki Y., Sivasundaram S., Tagami H.,
Saito N., Sampei G., Seki Y., Sivasundaram S., Tagami H.,
Takeda J., Takemoto K., Wada C., Yamamoto Y., Horiuchi T.;
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SETRAIN=06:H1 / CFT073 / ATCC 700928;

STRAIN=22388234; PubMed=12471157;

Welch R.A., Burland V., Plunkett G. III, Redford P., Roesch Welch R.A., Burland V., Plunkett G., Boutin A., Hackett J., S.

Rasko D., Buckles E.L., Liou S.-R., Boutin A., Hackett J., S.

Rasko D., Buckles E.L., Liou S.-R., Boutin A., Hackett J., S.

Mayhew G.F., Rose D.J., Zhou S., Schwartz D.C., Perna N.T.,

Mobley H.L.T., Donnenberg M.S., Blattner F.R.;

"Extensive mosaic structure revealed by the complete genome of uropathogenic Escherichia coli.";

of uropathogenic Escherichia coli.";

proc. Natl. Acad. Sci. U.S.A. 99:17020-17024 (2002).
                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 72-368 FROM N.A.
STRAINS-Various ECOR strains;
MEDLINE-95064015; pubMed-7973728;
Guttman D.S., Dykhuizen D.B.;
"Clonal divergence in Escherichia coli as
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MEDLINE=9345818; PubMed=8344525;
Carter A.T., Pearson B.M., Dickin
"Sequence of the Escherichia coli
Entner-Doudoroff pathway.";
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If pfam; PF02324; Glyco hydro 70; 1.
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Glucosyltransferase-I precursor (EC 2.4.1.5).
 EMBL;
 Sato S., Inoue M., Handa N., Aizawa Y., Isobe Y., Katayama "DNA sequence of the glucosyltransferase gene of serotype Streptococcus sobrinus."; DNA Seq. 4:19-27(1993).
 Streptococcus sobrinus.
Bacteria; Firmicutes; I
 MEDLINE=94146405; PubMed=8312602;
 STRAIN=OMZ176;
 Streptococcus
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 "DNA and amino-acid sequences of water-insoluble-glucan synthetase produced from Streptococcus sobrinus ATCC 33478";
Ann. Kagoshima Univ. Dental School 16:23-29(1996).
EMBL; D63570; BAA03792.1; -.
InterPro; IPR002479; CW_binding.
InterPro; IPR00318; Glyco_hydro_70.
InterPro; IPR00318; Glyco_hydro_70.
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 Streptococcus sobrinus.
Bacteria; Firmicutes; I
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GLUCOSYLTRANSFERASE.
 01-OCT-2002
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MEDLINE=20169623; PubMed=10705445;
MEDLINE=20169623; PubMed=10705445;
Funane K., Mizuno K., Takahara H., Kobayashi
Funane K., Mizuno K., Takahara H., Kobayashi
Funane Encoding a dextransucrase-like protein
mesenteroides NRRL B-512F.";
Biosci. Biotechnol. Biochem. 64:29-38(2000).
BMBL; AB020202, BAA90527.1; -.
 Sato S.;
 STRAIN-ATCC 33478;
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 Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lactobacillales;
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Bozonnet S., Dols-Lafargue M., Fabre B., Pizzut S., Remaud-Bozonnet S., Dols-Lafargue M., Fabre B., Pizzut S., Remaud-Mondan P., Willemot R.M.;

Molecular characterisation of DSR-E, an alpha-1,2 linkage synthesising dextransucrase with two catalytic domains.";

J. Bacteriol. 184:5753-5761(2002).

EMBL; AJ430204; CAD22883.1; -.
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Monchois V., Remaud-Simeon M., Monsan P., Willemot R.M.;
"Cloning and sequencing of a gene coding for an extracellular
"Cloning and sequencing of a gene coding for an extracellular
dextransucrase (DSRB) from Leuconostoc mesenteroides NRRL B-12
 NCBI_TaxID=1245;
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Bacteria; Firmicutes; Lactobacillales; Leuconostoc
 synthesizing only a a(1-6) glucan. FEMS Microbiol. Lett. 0:0-0(1998). EMBL; AF030129; AAB95453.1; -
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01-OCT-2002 (TrEMBLrel.)
 "Purification, characterization, and molecular analysis of encoding glucosyltransferase from Streptococcus oralis."; Infect. Immun. 68:2475-2483(2000).

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01-OCT-2002 (TrEMBLrel.
Glucosyltransferase.
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STRALN-ATCC10557;
MEDLINE=20231779; PubMed=10768934;
Fujiwara T., Hoshino T., Ooshima T
 Streptococcus oralis.
 Streptococcus.
 Bacteria; Firmicutes;
 SEQUENCE
 MEDLINE=92276337; PubMed=1534326;
Sulavik M.C., Tardif G., Clewell D.B.;
"Identification of a gene, rgg, which regulates expression of glucosyltransferase and influences the Spp phenotype of Streptococcus gordonii Challis.";
 MEDLINE=96157084; PubMed=8586195;
Vickerman M.M., Sulavik M.C., Clewell D.B.;
"Molecular analysis of Streptococcus gordon
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01-OCT-2002
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STRAIN=NRRL B-512-F;
Bhatnagar R., Singh D.K.S.;
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Cloning and Molecular Characterization of Dextransucrase
Leuconostoc mesenteroides NRRL B-512F.";
Submitted (DEC-1996) to the EMBL/GenBank/DDBJ databases.
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Bacteria; Firmicutes; Lact
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 548
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01-OCT-2002
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01-MAR-2003
 Neubauer H., Bauche A., Mollet B.;
"Isolation and characterization of
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Simpson C.L., Giffard P.M., Jacques N.A.;

Simpson C.L., Giffard P.M., Jacques N.A.;

"Streptococcus salivarius ATCC 25975 possesses at least two genes coding for primer-independent glucosyltransferases.";

Infect. Immun. 63:609-621(1995).

EMBL; L35495; AAC41412.1;

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Manada N., Fukushima K., Nomura Y., Senpuku H., Hayakawa M.,
Mukasa H., Shiroza T., Abiko Y.,
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"Cloning and nucleotide sequence analysis of the Streptococcus
separing gtfU gene that produces a highly branched water-soluble
 SEQUENCE
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Biochim. Biophys. Acta 1570:75-79(2002).
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 45 summaries
 US-09-007-999-2
US-09-210-361-2
US-09-210-361-4
US-09-210-361-4
US-09-210-361-6
US-09-210-361-6
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|            | sequence 1, Appri |                 | ,<br>,          | יו<br>פיני       | σ                | י ת              | 1 1 2            |                 | ,<br>L          | Sequence 6, Appri | 0               | ب ر              | ۸ د                  | 74004              | Sequence 1/303, A    | Sequence 4, Appril | Sequence of Appli | Sequence 3, Appli |

### GENERAL INFORMATION: APPLICANT: Nichols, Scott E. APPLICANT: Nichols, Scott E. TITLE OF INVENTION: Substitutes for Modified TITLE OF INVENTION: Latexes in Paper Manufac FILE REFERENCE: 0357CR CURRENT FILING DATE: 1998-12-11 CURRENT FILING DATE: 1998-12-11 CURRENT FILING DATE: 1998-01-16 EARLIER FILING DATE: 1998-01-16 EARLIER FILING DATE: 1998-01-20 ARLIER FILING DATE: 1995-06-07 EARLIER FILING DATE: 1995-06-07 EARLIER APPLICATION NUMBER: 09/009,620 EARLIER FILING DATE: 1998-01-20 EARLIER APPLICATION NUMBER: 09/009,620 RESULT 1 US-09-007-999-2 ; ORGANISM: Streptococcus mutans US-09-007-999-2 밁 US-09-210-361-2 Sequence 2, Application US/09007999 Patent No. 6087559 GENERAL INFORMATION: APPLICANT: Nichols, Scott E. TITLE OF INVENTION: Substitutes for Modified Starch TITLE OF INVENTION: Latexes in Paper Manufacture FILE REFERENCE: 0356D SOFTWARE: FastSEQ for Windows Version SEQ ID NO 2 Sequence 2, Applic Patent No. 6284479 Matches Query Match Best Local Similarity CURRENT APPLICATION NUMBER: US/09/007,999 CURRENT FILING DATE: 1998-01-16 EARLIER APPLICATION NUMBER: 08/478,704 EARLIER FILING DATE: 1995-06-07 NUMBER OF SEQ ID NOS: 2 TYPE: PRT LENGTH: 1475 481 18; μ ANNHVSIVEAWSDNDTPYLHD 21 ANDHLSILEAWSDNDTPYLHD 501 Application US/09210361 Conservative Latexes in Paper Manufacture 90.8%; u T Score 108; DB 3; Pred. No. 1.3e-08; for Modified Starches Mismatches DB 3; 0 Length 1475; Indels 0 Gaps

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APPLICATION NUMBER: 08/485,243 FILING DATE: 1995-06-07

NUMBER:

09/008,172

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; ORGANISM: Streptococcus mutans
US-09-210-361-2
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 RESULT 3
US-09-740-274-2
 RESULT 4
US-09-210-361-4
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 ORGANISM: Streptococcus mutans US-09-740-274-2
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Patent No. 6465203
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 Sequence 4, Application US/09210361
Patent No. 6284479
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APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches and
TITLE OF INVENTION: Latexes in Paper Manufacture
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US-09-604-957-4

Sequence 4, Applic Patent No. 6486314

Application US/09604957

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 US-09-008-172-2
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: PatentIn Ver. 2.1
 CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
 TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388
 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
 FILE REFERENCE: 0358D
CURRENT APPLICATION NUMBER: US/09/008,172
CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
 CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches
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FILE REFERENCE: 0357CR
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Sequence 5, Application Patent No. 6486314
GENERAL INFORMATION:

Application US/09604957

VAN GEEL-SCHUTTEN,

GERRITDINA HENDRIKA

DIJKHUIZEN, LUBBERT

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PRIOR FILING DATE: 1998-01.
PRIOR FILING DATE: 1995-06.
PRIOR FILING DATE: 1995-06.
PRIOR PILING DATE: 1998-01.
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CURRENT FILING DATE: 2000-12-19
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 APPLICANT: Nichols, TITLE OF INVENTION:
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin Ver. 2.1
 APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
Query Match
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 FILE REFERENCE: BO 43388
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TELEX: 26547
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APPLICANT: Simpson, Christen Carlson
APPLICANT: Giffard, Philip Morrison
APPLICANT: Jacques, Nicholas Anthony
APPLICANT: Jacques, Nicholas Anthony
APPLICANT: TRUENTION: Genetic Manipulation of Plants to
 COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
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 CORRESPONDENCE ADDRESS:
 NUMBER OF SEQUENCES:
 ADDRESSEE: Griffith Hack & Co
STREET: Level 8, 168 Walker Street
CITY: No. 5981838th Sydney
STATE: New South Wales
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RBSULT 14
US-09-604-957-7
; Sequence 7, Application US/09604957
; Patent No. 6486314
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 US-09-499-203-2
 Sequence 6, Application US/09604957
Patent No. 6486314
 GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN,
APPLICANT: DIJKHUIZEN, LUBBEE
APPLICANT: RAHAOUI, HAKIM
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APPLICANT: KOSSMANN, Jens
APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules
FILE REFERENCE: 147-196P
 Sequence 2, Application US/09499203
Patent No. 6570065
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PRIOR FILING DATE: 2000-05-25
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US-09-604-957-7
 GENERAL INFORMATION:

APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA

APPLICANT: DIJUHUIZEN, LUBBERT

APPLICANT: RAHAOUI, HAKKIM

APPLICANT: REER, ROBERT-AN

TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN

TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN

TITLE REFERENCE: BO 43388

CURRENT APPLICATION NUMBER: US/09/604,957

CURRENT FILING DATE: 2000-06-28

PRIOR APPLICATION NUMBER: 00201871.1

PRIOR FILING DATE: 2000-05-25

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 APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
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# SUMMARIES

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| <b>4</b><br>5       | 44           | 43           | 42     | 41               | 40         | 39       | 38                  | 37   | 36                  | ω<br>51 | 34                | ω<br>G             | 32                | 31                 | 30                | 29              | 28               | 27   | 26               | 25       | 24         | 23               | 22    | 21                  | 20       | 19             | 18            | 17            | 16            |
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| 2485                | 2466         | 1267         | 749    | 438              | 381        | 358      | 302                 | 120  | 49                  | 7349    | 455               | 432                | 349               | 715                | 603               | 603             | 539              | 437  | 332              | 87       | 67         | 27               | 1092  | 491                 | 491      | 202            | 202           | 15            | 15            |
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| seducation so, when | , L          | 0 00         | 11.    | 14114,           |            |          | 140                 | ര    | 18687               | 46, ADE | Sequence 6, Appli | Sequence 5096, Ap  | Sequence 22, Appr | e /5               | Sequence 35, Appl | O<br>2 2<br>7 1 | 9 34,            | ,    | e 20,            | e 149    | e 324,     | 26, 4            | 9 5 7 | 14/5                | 101      | e II, AP       | e 11,         |               | 90,           |

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APPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper FILE PRICE PRIVER DATE: 0957CRD
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PRIOR FILING DATE: 1995-01-16
PRIOR APPLICATION NUMBER: 09/007,999
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 CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
FILE REFERENCE: 0357CRD
 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
 PRIOR FILING DATE: 19
 APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
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 S
 ORGANISM: streptococcus mutans US-09-740-274-6
 US-09-740-274-6
 US-09-995-749A-11
 US-09-995-749A-11
 GENERAL INFORMATION APPLICANT: Nichol:
 Sequence 6, Application US/09740274 Patent No. US20020031826A1
 GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
 Query Match
62.2%; Score 74; DB 9;
Best Local Similarity 66.7%; Pred. No. 0.012;
 SEQ ID NO 6
 Sequence 11, Application US/09995749A Patent No. US20020155568A1
 Matches
 SEQ ID NO 11
LENGTH: 522
Query Match
Best Local Similarity
 PRIOR FILING DATE: 1998-(
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-(
PRIOR APPLICATION NUMBER:
 CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
CURRENT FILING DATE: 09/210,361
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR APPLICATION NUMBER: 09/007,999
 PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver. 2.1
 PRIOR FILING DATE: 1
 PRIOR FILING DATE: 1995-0
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-0
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and
 TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES FILE REFERENCE: BO43388-CIP CURRENT APPLICATION NUMBER: US/09/995,749A CURRENT FILING DATE: 2001-11-29
 SOFTWARE:
 PRIOR FILING DATE: 1998-0
PRIOR APPLICATION NUMBER:
 FILE REFERENCE:
 PRIOR APPLICATION NUMBER: 09/604,957 PRIOR FILING DATE: 2000-06-28
 APPLICANT:
 PRIOR APPLICATION NUMBER:
 TYPE: PRT ORGANISM: Leuconostoc mesenteroides
 ENGTH: 1430
 495 AINHLSILEAWSDNDPQYNKD 515
 75
 14;
 1 ANNHVSIVEAWSDNDTPYLHD
 1 ANNHVSIVEAWSDNDTPYLHD 21
 AINHLSILEAWSDNDPQYNKD
 FastSEQ for Windows Version 3.0
 RAHAOUI, HAKIM
LEER, ROBERT-JAN
 Conservative
 1995-06-07
 1998-01-16
 1998-01-16
 1995-06-07
 1995-06-07
 54.6%;
 09/008,172
 09/009,620
 08/478,704
 08/482,711
 2
 Score 65;
Pred. No.
 95
 DB 10;
0.097;
 DB 9;
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 Length 1430;
 Indels
 0
 Gaps
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 RESULT 6
US-09-995-749A-12
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 RESULT 7
 US-09-995-749A-12
 US-09-995-749A-13
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 LENGTH: 535
TYPE: PRT
CORGANISM: Lactobacillus reuteri
US-09-995-749A-13
밁
 Matches
 GENERAL INFORMATION: APPLICANT: VAN GEEL-SCHUTTEN,
 Sequence 12, Application UP Patent No. US20020155568A1
 SEQ ID NO 12
 Matches
 Query Match
Best Local Similarity
 Sequence 13, Application US/09995749A Patent No. US20020155568A1
 APPLICANT:
APPLICANT:
 Matches
 Query Match
Best Local Similarity
 SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 13
 GENERAL INFORMATION:
 CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
 PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
 APPLICANT: VAN GEEL-SCHUTTEN,
APPLICANT: DIUKHUIZEN, LUBBER
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
 FILE REFERENCE: BO43388-CIP
 PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
 CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11.29
 TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
 NUMBER OF SEQ ID NOS: 19
 FILE REFERENCE:
 APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
 TYPE: PRT ORGANISM: Leuconostoc mesenteroides
 ENGTH: 584
 75
 75 ANKHLSILEDWNGKDPQYVN 94
 12;
74 SNKHINILEDWNHADPEYFN 93
 1 ANNHVSIVEAWSDNDTPYLH 20
 9
 ANNHUSIVEAWSDNDTPYLH 20
 ANQHESILEDWSHNDPLYVID
 ANNHVSIVEAWSDNDTPYLHD 21
 RAHAOUI, HAKIM
LEER, ROBERT-JAN
 DIJKHUIZEN, LUBBERT
 Application US/09995749A
 DIJKHUIZEN, LUBBERT
 Conservative
 Conservative
 Conservative
 BO43388-CIP
 46.2%;
45.0%;
 40.3%; Score 48; 35.0%; Pred. No.
 ; Score 55; DB 1; Pred. No. 3.8; 5; Mismatches
 GERRITDINA HENDRIKA
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 GERRITDINA HENDRIKA
 6; Mismatches
 95
 Mismatches
 DB 10;
 DB 10;
 6;
 6
 Length 584;
 Length 535;
 Indels
 Indels
 0;
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 Gaps
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RESULT 8
US-09-995-749A-2
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 US-09-995-749A-2
 US-10-211-962-96
RESULT 10
US-09-8615-73
; Sequence 73, Application US/09888615
; Patent No. US20020064856A1
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 US-10-211-962-96
 PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 2
 Sequence 2, Application US/09995749A Patent No. US20020155568A1
 CURRENT FILING DATE: 2002-08-01
PRIOR APPLICATION NUMBER: US/09/562,737
PRIOR FILING DATE: 2000-05-01
NUMBER OF SEQ ID NOS: 132
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 96
 40.3%;
Best Local Similarity 35.0%;
Matches 7; Conservative
 GENERAL INFORMATION:
 Sequence 96, App
Publication No.
 GENERAL INFORMATION
 Matches
 Query Match
 CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
 APPLICANT: VAN GEEL-SCHUTTEN,
 APPLICANT: Herz, Joachim
APPLICANT: Gotthardt, Michael
APPLICANT: MOVENTION: LDL Receptor Signaling
FILE REFERENCE: UTSW0708
 PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
 PRIOR APPLICATION NUMBER: 09/604,957
 TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES FILE REFERENCE: BO43388-CIP
 APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
 APPLICANT: DIJKHUIZEN,
 CURRENT APPLICATION NUMBER: US/10/211,962
 APPLICANT:
 TYPE: PRT ORGANISM: Lactobacillus reuteri
 OTHER INFORMATION: Description of Artificial Sequence: Synthetic OTHER INFORMATION: Sequence
 TYPE: PRT
ORGANISM: Artificial Sequence
 LENGTH:
 FEATURE:
 ENGTH: 749
 Local
 1053 SNKHINILEDWNHADPEYFN 1072
 136
 1781
 1 ANNHVSIVEAWSDNDTPYLH 20
 Similarity
8; Conserv
 SAVEEWIDSATPHPH 150
 SIVEAWSDNDTPYLH 20
 Application US/10211962
Vo. US20030082640A1
 Conservative
 2000-06-
 39.5%;
 LUBBERT
 GERRITDINA HENDRIKA
 6
 Score 48;
Pred. No.
 Pred
 Score 47;
 Mismatches
 Mismatches
 No.
 1.6e+02
 96;
 DB 10;
 DB
 Pathways
 15;
 Length 1781;
 Length 749;
 Indels
 0
 0
 Gaps
 0;
 0;
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 US-10-009-823A-1
 ; ORGANISM: Homo sapiens US-09-888-615-73
 APPLICANT: CHARVECEL, SEAN
APPLICANT: CHARVECZAK, GLEN
APPLICANT: CHARVECZAK, GLEN
APPLICANT: SUDARSANAM, SUCHA
TITLE OF INVENTION: NOVEL PROTEASES
FILE REFERENCE: 038602/1214
CURRENT FILING DATE: 2001-06-26
PRIOR APPLICATION NUMBER: US/09/888,615
CURRENT FILING DATE: 2001-06-26
PRIOR APPLICATION NUMBER: 60/214,047
PRIOR FILING DATE: 2000-06-26
NUMBER OF SEQ ID NOS: 150
 RESULT 12
US-10-195-144-17
; Sequence 17, Application US/10195144
; Publication No. US20030126646A1
; Publication No. US20030126646A1
; GENERAL INFORMATION:
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 US-10-009-823A-1
 SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 73
LENGTH: 1604
 Query Match 39.1%;
Best Local Similarity 47.4%;
Matches 9; Conservative
 Sequence 1, Application US/10009823A Publication No. US20030157120A1
 GENERAL INFORMATION:
 GENERAL INFORMATION:
 APPLICANT: PLOWMAN,
APPLICANT: WHYTE,
APPLICANT: CAENEPE
 Matches
 Best Local Similarity
 Query Match
 CURRENT APPLICATION NUMBER: US/10/009,823A CURRENT FILING DATE: 2002-08-13 PRIOR APPLICATION NUMBER: PCT/AU00/00437 PRIOR FILING DATE: 2000-05-11
 APPLICANT: PATEONS, Jim
APPLICANT: Ankenbauer, Robert G.
TITLE OF INVENTION: LAWSONIA DERIVED GENE AND RELATED FLGE
TITLE OF INVENTION: POLYPEPTIDES, PEPTIDES AND PROTEINS AND THEIR USES
FILE REFERENCE: DAVIISO.001APC
FILE REFERENCE: DAVIISO.001APC
 APPLICANT: Sinistaj, Meri
APPLICANT: Hasse, Detlef
APPLICANT: BROWN, GREGORY G
 APPLICANT: Panaccio, Michael APPLICANT: Rosey, Everett L
 TYPE: PRT
 LENGTH: 502
TYPE: PRT
ORGANISM: Lawsonia intracellularis
 294 VALLEVWKDNRTDDIFELH 312
 185 ANPYFALLESWKGNGTP 201
 5 VSIVEAWSDN---DTPYLH 20
 WHYTE, DAVID
 ANNHVSIVEAWSDNDTP 17
 Rosey, Everett Lee
 Conservative
 GREGORY
 38.7%;
41.2%;
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 5
 Score 46.5; DB 9;
Pred. No. 2.4e+02;
 Score 46; DB 12;
Pred. No. 79;
 Mismatches
 Mismatches
 Length 502;
 Length 1604;
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 Gaps
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NUMBER OF SEQ ID NOS: 7059
SOFTWARE: Patentin ver. 3.0
SEQ ID NO 4571
LENGTH: 199
TYPE: PRT
 ; LENGTH: 1494
; TYPE: PRT
; ORGANISM: Raphanus sativum
US-10-195-144-17
 RESULT 13
US-09-738-626-4571
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 ORGANISM: Corynebacterium glutamicum US-09-738-626-4571
 SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 17
 TITLE OF INVENTION: NUCLEAR FERTILITY RESTORER GENES AND METHODS OF USE IN TITLE OF INVENTION: PLANTS
FILE REPERENCE: 16313-0136
CURRENT APPLICATION NUMBER: US/10/195,144
CURRENT FILING DATE: 2002-10-01
PRIOR APPLICATION NUMBER: 60/305,026
PRIOR APPLICATION NUMBER: 60/305,363
PRIOR FILING DATE: 2001-07-13
PRIOR FILING DATE: 2001-07-13
PRIOR FILING DATE: 2001-07-30
NUMBER: 05-850,ID NOS: 128
OUTWARDER: 05-850,ID NOS: 128
 Matches
 Query Match
 APPLICANT:
APPLICANT:
APPLICANT:
 GENERAL INFORMATION
 Sequence 4571, Application US/09738626 Publication No. US20020197605A1
 Matches
 Query Match
 PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR PILING DATE: 1999-12-16
PRIOR PELICATION NUMBER: JP 00/159162
PRIOR FILING DATE: 2000-04-07
PRIOR APPLICATION NUMBER: JP 00/280988
PRIOR FILING DATE: 2000-08-03
 APPLICANT:
 APPLICANT: OZAKI, AKIO
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
 APPLICANT:
 APPLICANT: NAKAGAWA,
 APPLICANT:
 APPLICANT:
 APPLICANT:
 APPLICANT:
 APPLICANT:
 APPLICANT:
 APPLICANT:
 Local Similarity 41.2%; res 7; Conservative
 Local
 1130 NTISLAETWLQNSEPFL 1146
177 LVEVWTDQDTRY 188
 3 NHVSIVEAWSDNDTPYL 19
 7 IVEAWSDNDTPY 18
 Similarity
 DENDY, CHARLES
LANDRY, BENOIT S.
CHEUNG, WING
 JIN, HUA
 FORMANOVA, NATASA
 HAYASHI,
 SENOH, AKIHIRO IKEDA, MASATO
 YOKOI, HARUHIKO
TATBISHI, NAOKO
 OCHIAI,
 ANDO,
 MIZOGUCHI, HIROSHI
 Conservative
 SEIKO
 KEIKO
 SATOSHI
 MIKIRO
 37.8%;
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 Score 46; I
Pred. No. 2
 Score 45; DB
Pred. No. 40;
 Mismatches
 Mismatches
 DB 15;
2.7e+02;
 10;
 Length 1494;
 Length 199;
 Indels
 0
 0
 Gaps
 Gaps
 0
 0
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APPLICANT: Natur, David L.

APPLICANT: Sim, Kim L.

TITLE OF INVENTION: Anti-Plasmodium Compositions and Methods of Use
FILE REFERENCE: 05213-0465 43170-262105

CURRENT APPLICATION NUMBER: US/09/924,154

CURRENT FILING DATE: 2001-08-07

PRIOR APPLICATION NUMBER: US 60/223,525

PRIOR FILING DATE: 2000-08-07

NUMBER OF SEQ ID NOS: 17

SOUTWARE: Patentin version 3.1

SEQ ID NO 16

LENGTH: 972

TYPE: PRT
ORGANISM: Mammalian
US-09-924-154-16
 APPLICANT: ONTRA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHATORI, WASHIYUKI
APPLICANT: HATTORI, MASHIYUKI
APPLICANT: HATTORI, MASHIYUKI
APPLICANT: HATTORI, MASHIYUKI
APPLICANT: HATTORI, WASHIYUKI
APPLICANTON NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
FRIOR APPLICATION NUMBER: UF 2001-204089
FRIOR APPLICATION NUMBER: UF 2001-272697
FRIOR APPLICATION NUMBER: UF 2001-272697
FRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 14923
LENGTH: 665
Search completed: November 13, 2003, 10:29:03 Job time : 28,4692 secs
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 ; TYPE: PRT ; ORGANISM: Streptomyces avermitilis US-10-156-761-14923
 RESULT 14
US-10-156-761-14923
 US-09-924-154-16
 RESULT 15
 Best Loc
Matches
 Sequence 16, Application US/09924154
Patent No. US20020127241A1
GENERAL INFORMATION:
 Sequence 14923, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
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 y Match 37.8%; Score 45; DB 15; Length 665; Local Similarity 50.0%; Pred. No. 1.5e+02; hes 9; Conservative 2; Mismatches 7; Indels
 304 NHTGVCLMEDDNDNQYLH 321
 88 NWTYLVEAWSDPVTTWRH 105
 3 NHVSIVEAWSDNDTPYLH 20
 3 NHVSIVEAWSDNDTPYLH 20
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 0
 Gaps
 0
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3
 Database
 Minimum DB seq length: 0
Maximum DB seq length: 2000000000
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 Total number of hits satisfying chosen parameters:
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 Sequence:
 Perfect score:
 Post-processing:
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 on:
 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
 protein search, using
 November 13, 2003, 09:31:40; Search time 38.5166 Seconds (without alignments) 86.541 Million cell updates/sec
 1107863 seqs, 158726573 residues
 BLOSUM62
 US-09-290-049A-13
113
 Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
 Gapop 10.0 , Gapext 0.5
 AIDHLSILEAWSGNDNDYVKQ
 GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
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SUMMARIES
 model
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|------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------|--------------------------|---|
| 73<br>73                                 | 73                 | 75                 | 75                 | 75                 | 75                 | 75       | Score                    |   |
| 64.6<br>64.6                             | 64.<br>64.         | 66.4               | 66.4               | 66.4               | 66.4               | 66.4     | Query<br>Match Length DB | ж |
| 1475<br>1475                             | 1017               | 1430               | 1430               | 1430               | 1430               | - 1      | Length I                 |   |
| 23<br>23                                 | 23                 | 2 2                | 23                 | 23                 | 23                 | 23       |                          |   |
| AAU98027<br>AAU98030                     | AAU79285           | AAU98044           | AAU98043           | AAU98042           | AAU98041           | AAU98029 | ij                       | 3 |
| S. mutane glucosyl<br>S. mutane glucosyl | Streptococcus muta | S. mutans glucosyl | S. mutans glucosyl | S. mutans gluccsyl | S. mutans glucosyl | Ø        | Description              |   |

| XX PA           | 77<br>77<br>77<br>77<br>77<br>77<br>77                                                  | Y PF       | g X       | X B       | SO        | X 2 2 2 3                                         | Y DE      | X H      | X A    | RES<br>AAU<br>ID           |            |                                         |                    |                                          |                    |                    |                      |                    |                                         |                      |                    |                       |                                          |                    |                    |                       |                                          |                    |                                          |                    |                      |                    |                       |             |
|-----------------|-----------------------------------------------------------------------------------------|------------|-----------|-----------|-----------|---------------------------------------------------|-----------|----------|--------|----------------------------|------------|-----------------------------------------|--------------------|------------------------------------------|--------------------|--------------------|----------------------|--------------------|-----------------------------------------|----------------------|--------------------|-----------------------|------------------------------------------|--------------------|--------------------|-----------------------|------------------------------------------|--------------------|------------------------------------------|--------------------|----------------------|--------------------|-----------------------|-------------|
| (NIC            | 11-1<br>07-1<br>16-1<br>20-1                                                            | 19-1       | 14-1      | US2       | Stre      | Gluc<br>coat<br>amyl                              | s.        | 27-1     | AAU98  | ESULT 1<br>AU98029<br>AAU9 |            | 44<br>45                                | 4<br>3             | 41<br>42                                 | 40                 | υ<br>0 <b>8</b>    | 37                   | , ω<br>, σ         | ωω<br>ω44                               | 3 E                  | 30                 | 2 8                   | 2 7<br>2 7                               | 25 4               | 221                | 3 2                   | 20                                       | 18                 | 16<br>17                                 | 15                 | 14.5                 | 12                 | 110                   |             |
| (NICH/) NICHOLS | DEC-1998;<br>JUN-1995;<br>JUN-1995;<br>JUN-1995;<br>JAN-1998;<br>JAN-1998;<br>JAN-1998; | DEC-2000;  | MAR-2002. | 002031826 | eptococcu | osyltrar<br>ing comp<br>oplast;                   | mutans gl | AUG-2002 | 98029; | 8029 st                    |            | 8.5<br>48                               | 8 6                |                                          | 010                | u (u               | σα.<br>υπυ           | 4 9                |                                         | 10 10                |                    | ט ע                   | 10 #-                                    | 0.0                |                    | - w                   | w u                                      |                    | w w                                      |                    | ~ ~                  |                    | <b></b>               |             |
| STO             |                                                                                         | 200        |           | -A1.      | s mut     | nsfera<br>positi<br>vacuo                         | glucosylt | (fi      |        | andar                      |            | 42.9<br>42.5                            | 42.9               | 42.9<br>42.9                             | 42.9               | 42.9               | 42.9                 | 43.4               | 45.1<br>44.2                            | 46.0                 | 46.9               | 52.2                  | 56.6<br>54.9                             | 57.5               | 62.8               | 64.<br>6.<br>6.<br>6. | 64.6                                     | 64.6               | 64.6<br>64.6                             | 64.6               | 64.<br>64.<br>6      | 64.6               | 0<br>4<br>0<br>0      | ;           |
| ,<br>pri        | 8US-02<br>5US-04<br>5US-04<br>5US-06<br>8US-06<br>8US-06<br>8US-06                      | 00US-07402 |           |           | tans.     | ase; GTFD<br>ion; gluc<br>ole; pape               | rans      | rst ent  |        | d; Protein;                |            | 576<br>12                               | 576                | 436<br>576                               | 427                | 319                | 289                  | 1429               | 12<br>121                               | 12                   | 12                 | 1527                  | 2835<br>1592                             | 2057               | 1375               | 1577                  | 1475                                     | 1475               | 1475                                     | 1475               | 1475                 | 1475               | 1475<br>1 <b>47</b> 5 | ;<br>;<br>; |
|                 | 10361<br>78704<br>82711<br>85243<br>107999<br>108172                                    | 0274       |           |           |           | κ <sub>Ε</sub> ,                                  | fera      | ry)      |        | ein;                       |            | 2 2<br>3 3                              | 22                 | 21<br>21                                 | 21                 | 2 22               | 22                   | 23                 | 23<br>22                                | 223                  | 23                 | 2 22                  | 14<br>14                                 | 21                 | 22.5               | 17                    | 23                                       | 23                 | 23                                       | 23                 | 23                   | 23                 | 223                   | ;           |
|                 |                                                                                         | •          |           |           |           | transgenic plant; ; starch; latex; t manufacture. | se GTFD.  |          |        | 1430 AA.                   | ALIGNMENTS | ABP64699<br>ABB98578                    | AAB94297           | AAB32411<br>AAB32384                     | AAB32412           | AAU32156           | AAB43277<br>AAM25871 | ABP47797           | ABB98647<br>AAU60582                    | ABB98644<br>ABB98646 | ABB98642           | ABB98641<br>AAII80055 | ABB98574<br>AAR32925                     | AAB10667           | AAU79288           | AAR91047              | AAU98040<br>AAU79284                     | AAU98039           | AAU98037<br>AAU98038                     | AAU98036           | AAU98034<br>AAU98035 | AAU98033           | AAU98031<br>AAU98032  | 1           |
|                 |                                                                                         |            |           |           |           | <pre>paper sizing; hermoplastic molecule;</pre>   |           |          |        |                            |            | Human protein SEQ<br>Dextrane saccharas | Human protein sequ | Human secreted pro<br>Human secreted pro | Human secreted pro | Novel human secret | Human protein sequ   | Yeast DNA topoisom | Dextrane-saccharas<br>Propionibacterium | Dextrane-saccharas   | Dextrane-saccharas | Dextrane-saccharas    | Dextran saccharase<br>Glucosyltransferea | L. mesenteroides a | Streptococcus much | Alpha-D-glucosyltr    | s. mutans grucosyr<br>Streptococcus muta | S. mutans glucosyl | s. mutans grucosyr<br>s. mutans GTFB mut | s. mutans glucosyl | s. mutans glucosyl   | s. mutans glucosyl | S. mutans glucosyl    |             |

Nichols

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AAU98041
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AC AAU
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DE S.
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XW G1u
XW COa
KW amy
XX
XX
 CC vector, a seed or tuber from the transgenic plant, ta paper sizing and/or coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC thermoplastic molecule or their combinations or glucan and starch where CC the glucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a CC glucosyltransforase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC for producing a glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant and inducing expression of the CC conditions to produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet.

CC Glucans are useful as substitutes for and additions to modified starch CC and latexes in paper manufacture. Unlike prior art techniques, which CC manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials that produce chemical effluents, paper CC environmentally friendly. Moreover, clucans also exhibit thermonlastic
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 D567T/D571K/K1014T, 1448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, and the GTF mutant acid sequence encoding the GTF mutant.
 an expression cassette comprising the polynucleotide operably linked to promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the
 Disclosure; Page 38-42; 44pp; English
 paper manufacture, comprises mutations in
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 coating composition; amyloplast; vacuole;
 S. mutans
 Sequence
 environmentally friendly. Moreover, glucans also exhibit ther properties and impart gloss to the paper during coating step. The present sequence represents GTFD.
 Glucosyltransferase;
 AAU98041 standard; Protein; 1430 AA
 27-AUG-2002
 invention an isolated protein comprising a glucosyltransferase B polypeptide having changes at position from I448V, D457N,
 2002-414332/44.
 1 AIDHLSILEAWSGNDNDYVK 20
 Similarity
 AINHLSILEAWSDNDPQYNK 514
 glucosyltransferase GTFD mutant T589D
 1430 AA
 Conservative
 ptide having changes at position from
D457N/D567T, D457N/D571K, D567T/D571K
 66.4%;
75.0%;
 GTFD; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
 paper manufacture; mutant; mutein.
 Score 75;
Pred. No.
 Mismatches
 DB 23; Length 1430; 0.007;
 specific positions
 4:
 exhibit thermoplastic
 Indels
 0;
 Gaps
 0
```

```
cc NATID/TSSEE. Also included are a glucan produced by the GTF mutant, CC NATID/TSSEE. Also included are a glucan produced by the GTF mutant, CC an isolated polymucleotide which encodes Pl or P2, or its complementary CC an isolated polymucleotide which encodes Pl or P2, or its complementary CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the polymucleotide operably linked to a cC promoter, a vector comprising the expression cassette, host cell CC introduced with the vector, a transgenic plant comprising the vector, a transgenic plant, a paper sizing and/or coeting composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC continuation is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a glucan is produced in the amyloplast and/or vacuole or a maize line CC comprising the glucan (paper sizing/coating agent). The vector is useful CC comprising the glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the conditions to produce a regenerated plant and inducing expression of the conditions by higher the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-l and cc chlorrophyll AB hinding protein to produce a transgenic plant, and glucan
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
 chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFD mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFD sequence appearing as AAU98029 and the information in claim 36.
 US2002031826-A1
 Synthetic.
 Streptococcus mutans
 (GTF) B polypeptide having changes at position from I448V D567T, K1014T, D457N/D567T, D457N/D571K, D567TC, D571K/C757L/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, D567T/D571K/K779Z/K1014T, D667T/D571K/K779Z/K1014T, D667T/D571K/K779Z/K1014T, D667T/D587K1014T, D667T/D71A, And K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T588
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 19-DEC-2000;
 Misc-difference
 changes at positions
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N,
 Claim 36; Page -; 44pp; English.
 paper manufacture, comprises mutations in specific positions
 WPI; 2002-414332/44
 (NICH/) NICHOLS
 20-JAN-1998;
 2000US-0740274
 95US-0485243.
98US-0007999.
98US-0008172.
 S
H
 98US-0009620
 95US-0478704.
95US-0482711.
 98US-0210361
 589
 Location/Qualifiers
 /note= "Wild-type Thr substituted by Asp"
 N471D/T589D,
```

```
RESULT 3
AAU98042
ID AAU9
XX AAU98042
XX AGN
AX COAT
AX COAT
XX Gluc
XX Gluc
XX GNT
FT Misc
YN US2C
XX The
PR 16-1
PR 16-1
PR 16-1
PR 16-1
PR 07-1
PR 16-1
PR 07-1
PR 07-1
PR 16-1
PR 16-1
PR 16-1
PR 07-1
PR 07-1
PR 07-1
P
 밁
 S
 S_O
 Matches
 Query Match
 changes at positions from 1987, 1992, produced by the GTF mutant, M47LD/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or vector, a seed or tuber from the transgenic plant a plant transformed a larex.
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44
 Nichols
 (NICH/)
 20-JAN-1998;
 16-JAN-1998;
16-JAN-1998;
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 Synthetic
 Streptococcus mutans
 27-AUG-2002
 AAU98042
 AAU98042 standard;
 Sequence
 Local
 mutans glucosyltransferase
 495
 \vdash
 l Similarity
15; Conserv
composition comprising a glucan produced gene encoding the mutant GTF, wild type or
 NICHOLS
 AINHLSILEAWSDNDPQYNK 514
 AIDHLSILEAWSGNDNDYVK 20
 1430
 Conservative
 2000US-0740274
 (first entry)
 95US-0478704.
95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
98US-0009620.
 98US-0210361
 ß
 589
 A
 Location/Qualifiers
 note= "Wild-type Thr substituted by Glu"
 Ħ
 Protein;
 66.4%;
75.0%;
 1430
 <u>,,</u>
 Score 75;
Pred. No.
 GTFD mutant T589E
 Mismatches
 0.007;
 DB 23;
 4
 Length 1430;
 Indels
 0;
 Gaps
 0
```

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밁
 RESULT
 8
 CC thermoplastic molecule or their combinations or glucan and starch where CC the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant cell under plant growing CC conditions to produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the CC regenerated plant, where the vector contains a transit sequence from CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch CC and latexes in paper manufacture. Unlike prior art techniques, which CC require input materials that produced by GTF, which utilises CC biologically produced input materials; is more cost-effective and CC intermentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

CC Mote: The present sequence is not shown in the specification but was created by the indexer using the GTFD sequence appearing as AAU98029 and the information in claim 36.
 Matches
 Query Match
Best Local
 07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 11-DEC-1998;
07-JUN-1995;
 Synthetic.
 Streptococcus
 amyloplast;
 Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
 S. mutans glucosyltransferase GTFD mutant N471D.
 27-AUG-2002
 AAU98043,
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 AAU98043
 Sequence
 495
 15;
 Similarity
 standard;
 AINHLSILEAWSDNDPOYNK 514
 AIDHLSILEAWSGNDNDYVK 20
 1430
 vacuole;
 (first entry)
 Conservative
 2000US-0740274
 mutans
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
 SU86
 98US-0007999.
98US-0008172.
 Location/Qualifiers
 AA;
 /note= "Wild-type Asn substituted
 Protein; 1430
 -0009620
 66.4%;
75.0%;
 paper manufacture;
 1;
 Score 75; DB 23
Pred. No. 0.007;
1; Mismatches
 mutant; mutein.
 23; Length 1430;
 4;
 λ̈́
 Indels
 0,
 Gaps
```

0

(NICH/) NICHOLS

တ

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AAU98044
ID AAUS
XX
AC AAUS
XX
AC AAUS
XX
XX
DT 27-J
XX
XX
DE S. 1
XX
XX
KW Glu
KW Coa
 멂
 8
 CC The invention an isolated protein comprising a glucosyltransferase CC (GTF) B polypeptide having changes at position from I448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D557TK/K1014T, L48V/D457N/D567T/D571K, D567T/D571K, CC D567T/D571K/K1014T, 1448V/D457N/D567T/D571K/K79Q/K1014T, CC D567T/D571K/K1014T, and K779Q or a GTF D polypeptide having CC changes at positions from T589D, N471D, M471D/T589D, and CC CARAGES Also included are a glucan produced by the GTF mutant, CC an isolated polynucleotide which encodes P1 or P2, or its complementary CC polynucleotide, a ribboucleid acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a cc promoter, a vector comprising the expression cassette, host cell CC introduced with the vector, a transgenic plant comprising the cc vector, a seed or tuber from the transgenic plant comprising the composition comprising a glucan produced in a plant transformed CC coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, CC thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line CC comprising the glucan (paner sizing, wild-type or mutant and a paper CC comprising the glucan (paner sizing/coating agent) The vector is "ne="iil" composition of the ducan (paner sizing/coating agent) The vector is "ne="iil" composition of the glucan (paner sizing/coating agent) The vector is "ne="iil" composition of the glucan (paner sizing/coating agent) The vector is "ne="iil" composition of the glucan (paner sizing/coating agent) The vector is "ne="iil" composition of the glucan (paner) The vector is "ne="iil" composition of the glucan (paner) The vector is "ne="iil" composition of the glucan (paner) The vector is "ne="iil" composition of the glucan (paner) The glucan paper composition of the gluc
 RESULT
 chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

The present sequence represents a GTFD mutant of the invention.
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and other products and contains a transit sequence from the plant where the vector contains a transit sequence from the plant was plant to produce the plant where the vector contains a transit sequence from the plant was plant to produce the plant was plant to produce the plant was plant to produce the plant and plant the plant
 Glucosyltransferase; coating composition;
 S. mutans glucosyltransferase GTFD mutant N471D/T589D.
 Sequence
 Claim
 AAU98044 standard; Protein; 1430
 2002-414332/44
 The present sequence is not shown in the specification but reated by the indexer using the GTFD sequence appearing as AAU98029 he information in claim 36.
 36; Page -; 44pp; English
 -2002
 1 AIDHLSILEAWSGNDNDYVK
 Similarity
 AINHLSILEAWSDNDPQYNK 514
 1430
 Conservative
 (first
 A
 entry)
 66.4%;
75.0%;
 GTFD; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
 Score 75; DB Pred. No. 0.00
 1,
 20
 DB 23; Length 1430; 0.007;
 4.
 0
 Gaps
 0
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07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes: paper manufacture, comprises mutations in specific positions -
 Misc-difference
 Synthetic
 Streptococcus mutans
 WPI; 2002-414332/44
 19-DEC-2000;
 US2002031826-A1
 Misc-difference
 amyloplast; vacuole; paper manufacture; mutant; mutein.
 20-JAN-1998,
 11-DEC-1998;
 (NICH/)
 16-JAN-1998;
16-JAN-1998;
 NICHOLS
 2000US-0740274
 95US-0478704
95US-0482711
 98US-0007999
98US-0008172
 95US-0485243
 98US-0210361
 589
 Ø
 Location/Qualifiers
 /note=
 note=
 Ħ
 "Wild-type Thr substituted by Asp'
 "Wild-type Asn
 substituted
 γď
```

Claim 36; Page -; 44pp; English.

useful

CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, D57NLP567T, D457NLD567T, D457N

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 SSSSS
 뮍
 Best Loca
Matches
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at postition from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, ID567T/D571K, ID567T/D571
 Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
 Sequence
 Note: The present sequence is not shown in the specification but was created by the indexer using the GTFD sequence appearing as AAU98029 and the information in claim 36.
 AAU98045 standard; Protein; 1430 AA
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
 Misc-difference
 Misc-difference
 27-AUG-2002
 11-DEC-1998;
07-JUN-1995;
 Streptococcus mutans
 Claim
 WPI; 2002-414332/44
 16-JAN-1998;
 16-JAN-1998;
 07-JUN-1995;
 07-JUN-1995;
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 (NICH/)
 Local
 495
 36; Page -; 44pp;
 15;
 1 AIDHLSILEAWSGNDNDYVK 20
 SE;
 NICHOLS
 Similarity
 AINHLSILEAWSDNDPQYNK 514
 glucosyltransferase
 1430 AA;
 Conservative
 (first entry)
 2000US-0740274
 95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 95US-0478704
 98US-0210361.
 Location/Qualifiers
 വ
 589
 /note= "Wild-type Thr substituted by Glu"
 note= "Wild-type Asn substituted by Asp"
 Ħ
 75.0%;
 English.
 1; Mismatches
 Score 75;
Pred. No.
 GTFD
 mutant N471D/T589E
 DB 23;
0.007;
 4
 Length 1430;
 s complementary
 molecule;
 0
 Gaps
 0
```

```
cc an expression cassette comprising the polynucleotide operably linked to a commoter, a vector comprising the expression cassette, host cell cc introduced with the vector, a transgenic plant comprising the cc coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line glucan in starch biosynthesis, transformed with a gene encoding a glucan (paper sizing/coating agent). The vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant and inducing expression of the conditions to produce a regenerated plant and inducing expression of the collynucleotide for a time sufficient to produce the glucan in the cl world comprises transforming a chorophyll AB binding protein to produce a transgenic plant, and glucan chorophyll AB binding protein to produce a transgenic plant, and glucan chorophyll as substitutes for and additions to modified starch cl singular eliquit materials that produce chemical effluents, paper comminately friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

CC Note: The present sequence is not shown in the specification but
 THE SECOND OF TH
 Ş
 밁
 Matches
 Best
 Query Match
 Sequence
 AAU79285 standard;
 Streptococcus mutans.
 anti-caries; glucosyl
 Antibody; dental caries; water insoluble glucan synthetase, anti-caries; glucosyl transferase-B; immunotherapy.
 13-AUG-2002
 AAU79285;
 04-OCT-2000; 2000JP-0304889
 16-APR-2002
 WPI; 2002-448101/48
 (UYNI-) UNIV NIPPON
 Local Similarity
 created by the i
 495
 The present sequence is not shown in the specification reated by the indexer using the GTFD sequence appearing he information in claim 36.
 15;
 AIDHLSILEAWSGNDNDYVK 20
 AINHLSILEAWSDNDPQYNK 514
 1430
 Conservative
 (first entry)
 2000JP-0304889.
 mutans
 ΑA;
 Protein; 1017
 66.4%;
75.0%;
 monoclonal antibody-related protein #2.
 ۲,
 Score 75;
Pred. No.
 Mismatches
 0
 DB 23; Length 1430;
 .007;
 0
 as
 Gaps
 AAU98029
 0
```

Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans

of

glucosyl

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RESULT 8
AAU98027
B
 Ş
 & X S S S S S S S S S S X &
 Query Match
Best Local
 Matches
 The invention an isolated protein comprising a glucosyltran (GTF) B polypeptide having changes at position from 1448V, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K/K779Q/K1014T, D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D,
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 Glucosyltransferase;
 The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17566) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyl transferase. B. The monoclonal antibody specifically inhibits water
 amyloplast;
 mutans glucosyltransferase
 AAU98027;
 insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This sequence represents a Streptococcus mutans monoclonal antibody-related
 Disclosure; Page
 Nichols
 07-JUN-1995
 07-JUN-1995;
 19-DEC-2000;
 14-MAR-2002
 Streptococcus mutans
 27-AUG-2002
 AAU98027 standard; Protein; 1475 AA
 Sequence
 (NICH/) NICHOLS
 16-JAN-1998
16-JAN-1998
 07-JUN-1995
 11-DEC-1998;
 Claim
 2002-414332/44
 447 ANDHISILEAWSDNDTPYL 465
 manufacture, comprises
 4; Page 17-19; 28pp; Japanese.
 14;
 Н
 SE
 ABK52938
 Similarity
 AIDHLSILEAWSGNDNDYV 19
 1017 AA;
 vacuole;
 Conservative
 2000US-0740274.
 (first entry)
 95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
 98US-0009620
 98US-0210361
 98US-0008172
 S
 21-25; 44pp; English.
 Ħ
 GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic
 glucan; starch; la
paper manufacture.
 64.6%;
73.7%;
 1;
 mutations
 Score 73; I
Pred. No. 0.
 GTFB
 Mismatches
 H
 DB 23;
 specific
 23;
 4.
 glucosyltransferase from 1448V, D457N.
 Length 1017;
 Indels
 positions
 molecule;
 and
 0
 Gaps
 0
```

```
AAU98030
 밁
 RESULT
 S
 CC N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes Pl or P2, or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell CC introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a CC comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a CC comprising the produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the credit of the produced in the amyloplast of potato or the vacuole of sugar beet. CC llucans are useful as substitutes for and additions to modified starch which credit the produce a transgenic plant, and glucan credities the vacuole of sugar beet. CC manufacture in the amyloplast of potato or the vacuole of sugar beet. CC manufacture in this substitutes for and additions to modified starch cc manufacture in the subjucan produce chemical effluents, paper which credities that produce deficient to modified starch
 Matches
 Query Match
Best Local (
11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
 Glucosyltransferase; coating composition; amyloplast; vacuole;
 manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents GTFB.
 Streptococcus mutans Synthetic.
 S. mutans glucosyltransferase GTFB mutant I448V.
 27-AUG-2002
 Sequence
 19-DEC-2000;
 Misc-difference
 AAU98030;
 US2002031826-A1
 AAU98030 standard; Protein;
 481
 14;
 Similarity
 ANDHESILEAWSDNDTPYL 499
 AIDHLSILEAWSGNDNDYV 19
 1475
 Conservative
 (first entry)
 2000US-0740274
98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
 Location/Qualifiers
 AA;
 /note= "Wild-type Ile
 64.6%;
73.7%;
 glucan; starch; lat paper manufacture;
 GTFB; transgenic plant; paper sizing, glucan; starch; latex; thermoplastic
 1475
 <u>ب</u>
 Score 73; DB
Pred. No. 0.01
1; Mismatches
 Ŗ
 substituted by Val"
 DB 23;
 mutant; mutein.
 paper sizing;
 4.
 Length 1475;
 Indels
 molecule;
 0
 Gaps
 0
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XXX
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 S
 CC promoter, a vector comprising the expression cassette, host cell controduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed comprising the mutant GTF, wild type or, starch, a latex, combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing)/coating agent). The vector is useful comprising the glucan in a plant. The method comprises transforming a conditions to produce a regenerated plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and conformed comprises transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and conformed in the amyloplast of potato or the vacuole of sugar beet. Clucans are useful as substitutes for and additions to modified starch crequire input materials that produce chemical effluents, paper compositions and produced input materials, is more cost-effective and compositions and impart gloss to the paper during coating step.

CC manufacture utilising the glucan produce chemical effluents, paper compositions and impart gloss to the paper during coating step.

CC manufacture said impart gloss to the paper during coating step.

CC mote: The present sequence represents a GTFB mutant of the invention.

CC and the information in claim 36.
 Query Match
Best Local
 Matches
 16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 AAU98031
 AAU98031 standard;
 N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D657T/D571K/K1014T, 1448V/D457N/D567T/D571K/K779Q/K1014T, V169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 Claim 36; Page -; 44pp; English.
 paper manufacture, comprises mutations in specific positions
 WPI; 2002-414332/44
 (NICH/) NICHOLS
 481
 14;
 Similarity
 information in claim
 ANDHLSILEAWSDNDTPYL 499
 AIDHLSILEAWSGNDNDYV 19
 1475
 Conservative
 98US-0007999.
98US-0008172.
98US-0009620.
 S E.
 64.6%;
73.7%;
 ۲.
 Score 73; DB 23; Pred. No. 0.015;
 Mismatches
 Length 1475;
 0
 Gaps
 0
```

```
CC USET, B 1014PHLIUE HAVING CHANGES AC DESTINON ITOM 1440V, D457N/D567T, D457N/D57TK, D57TK/D57TK, CC D567T/D57TK/K1014T, D457N/D567T, D457N/D57TK/K779D/K1014T, CC D567T/D57TK/K717D57TK/K717D57TK/K717D57TK/K717D57TK/K717D57TK/K779D/K1014T, CC P567T/D57TK/K779D/K1014T, CC P567T/D57TK/K779D/K1014T, CC D47TD57TK/K779D/K1014T, CC D47TD57TK/K779D/K1014TK/CC D47TD57TK/K779D/
 07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 Claim
and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
 WPI; 2002-414332/44.
 19-DEC-2000; 2000US-0740274
 14-MAR-2002
 Streptococcus
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
 S. mutans glucosyltransferase GTFB mutant D457N
 27-AUG-2002
 The invention an isolated protein comprising
 (NICH/) NICHOLS
 11-DEC-1998;
 US2002031826-A1
 Misc-difference
 (GTF) B
 36; Page -; 44pp; English.
 3 polypeptide having changes at position from I KI014T, D457N/D567T, D457N/D571K, D567T/D571K,
 vacuole;
 (first
 mutans.
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
 98US-0007999.
98US-0008172
 98US-0009620
 ເຈ
 Location/Qualifiers
 /note= "Wild-type Asp substituted by
 entry)
 paper manufacture; mutant; mutein.
 glucosyltransferase from I448V, D457N,
```

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RESULT 11
AAU98032
ID 9A032
ID AAU98
XX AAU98
XX GAUGE
XX GAUGE
XX GAUGE
XX GAUGE
XX GAUGE
XX GAUGE
XX Streg
OS Synth
XX I1-D
PR 11-D
PR 11-D
PR 11-J

 SSSSSSSSSS
 멍
 Ś
 Query Match
 biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
 coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase GTFB mutant D567T.
 27-AUG-2002
 Sequence
 Glucosyltransferase; GTFB; transgenic plant; paper sizing;
 AAU98032;
 AAU98032 standard; Protein; 1475 AA
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, D457N/D571K, D457N/D571K, D457N/D571K, D457N/D571K, T448V/D457N/D567T/D571K/K779Q/K1014T, P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 Synthetic
 Streptococcus
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 N471D/T589E.
 Claim
 WPI; 2002-414332/44.
 Nichols
 (NICH/)
 16-JAN-1998;
16-JAN-1998;
 07-JUN-1995;
 07-JUN-1995;
 Local
 481
 36;
 Н
 Œ;
 NICHOLS
 Similarity
 ANDHISILEAWSDNDTPYL 499
 AIDHLSILEAWSGNDNDYV 19
 Page -;
 1475
 Conservative
 (first
 Also
 2000US-0740274
 mutans
 98US-0210361.
95US-0478704.
95US-0485711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 AA;
 Location/Qualifiers 567
 ທ
 /note= "Wild-type Asp substituted by Thr"
 44pp; English
 included are
 H
 entry)
 64.6%;
 Score 73; DB
Pred. No. 0.01
1; Mismatches
 glucan
 DB 23;
0.015;
 produced by
 4
 Length 1475;
 Indels
 the GTF
 0;
 mutant
 Gaps
 0
```

```
AAU98033
ID AAU98
XX AAU9803
ID AAU98
XX AU980
XX AU980
XX COALI
DE S. mu
XX Glucc
XW COALI
KW amyll
XX Streg
OS Synch
KW amyll
XX Streg
OS Synch
XX Synch
XX IS-D
14-M
XX IS-D
PR 11-D
PR 11-D
 cc polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, cc an expression cassette comprising the polynucleotide operably linked to a compression cassette, a vector comprising the expression cassette, host cell controluced with the vector, a transgenic plant comprising the vector coating composition comprising the expression cassette, host cell coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, ct thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan in a plant transforming a comparising the glucan in plant. The method comprises transforming a comparising the glucan in a plant. The method comprises transforming a complications to produce a regenerated plant and inducing expression of the collumn cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chorophyl AB binding protein to produce a transgenic plant, and glucan cis produced in the amyloplast of potato or the vacuole of sugar beet. Cc and latexes in paper manufacture. Unlike prior art techniques, which creatian that produced by GTF, which utilises biologically produced input materials, is more cost-effective and centuring ordered by the indexer using the GTFB mutant of the invention.

Cc note: The present sequence is not shown in the specification but of the information in claim 36.
 밁
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 Matches
 Query Match
Best Local
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase GTFB mutant K1014T
 AAU98033;
 Sequence
 Streptococcus
 27-AUG-2002
 AAU98033
 Synthetic
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 481
 14;
 μ
 Similarity
 standard; Protein; 1475
 ANDHISILEAWSDNDTPYL 499
 AIDHLSILEAWSGNDNDYV 19
 1475 AA;
 Conservative
 (first entry)
 mutans
 Location/Qualifiers
 /note= "Wild-type Lys substituted by
 64.6%;
73.7%;
 1:
 Score 73;
Pred. No.
 Mismatches
 DB 23;
 4.
 Length 1475;
 molecule;
 0;
 Gaps
 0
```

11-DEC-1998; 07-JUN-1995;

98US-0210361. 95US-0478704.

19-DEC-2000; 2000US-0740274

```
AAU98034
ID AAU9
XX
 멂
 S
 RESULT 13
 CC (GTF) B polypeptide having changes at position from 144VV, D457N, CC D567T/D571K/K1014T, D457N/D57TK, D567T/D571K/K1014T, 1448V/D457T, D567T/D571K/K1014T, 1448V/D457T, D567T/D571K/K1014T, 1448V/D457T, D567T/D571K/K1014T, 1448V/D457T, D567T/D571K/K719D/K1014T, CC D567T/D571K, And K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D/T589D, and an isolated polynucleotide which encodes P1 or P2, or its complementary CC plynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a promoter, a vector comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, comprising the glucan is produced in the amyloplast and/or vector, glucan and starch where the glucan is produced in the amyloplast and/or vector a maize line comprising the glucan poduced with a gene encoding a composition of produce a regenerated plant. The method comprises transforming a composition to produce a regenerated plant and inducing expression of the comprising the glucan in the produce a regenerated plant and inducing expression of the composition to produce a regenerated plant and inducing expression of the composition of the mutant growing the glucan in the amyloplast of potato or the vacuole of sugar beet. CC closes are useful as substitutes for and additions to modified starch can be produced in the amyloplast of potato or the vacuole of sugar beet. CC closes are substitutes for and additions to modified starch can be produced input materials, is more cost-effective and colorably produced input materials, is more cost-effective and corrected so the paper during coating step.
 Query Match
Best Local S
Matches 14
 .07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
 properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification bu was created by the indexer using the GTFB sequence appearing as and the information in claim 36.
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
 AAU98034 standard; Protein; 1475
 Sequence
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44
 Nichols
 20-JAN-1998;
 07-JUN-1995;
 (NICH/)
 invention an isolated protein comprising
 481
 14;
 NICHOLS
 Similarity
 AIDHLSILEAWSGNDNDYV 19
 1475
 Conservative
 95US-0485243.
98US-0007999.
98US-0008172.
 98US-0009620
 95US-0482711.
 A
 ശ
 64.6%;
73.7%;
 Score 73; DB
Pred. No. 0.01
1; Mismatches
 499
 Ä
 DB 23;
0.015;
 a glucosyltransferase
on from I448V, D457N,
 Length 1475;
 appearing as i
 0
 AAU98027
 Gaps
 0
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CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D57
 07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
 Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 coating composition;
amyloplast; vacuole;
 Glucosyltransferase;
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44
 (NICH/) NICHOLS
 19-DEC-2000;
 Misc-difference
 Synthetic
 Streptococcus
 27-AUG-2002
 mutans glucosyltransferase GTFB mutant
 2000US-0740274
 (first entry)
 mutans
 98US-0210361.
95US-0478704.
95US-0482711.
 98US-0007999.
98US-0008172.
 98US-0009620
 95US-0485243
 ß
 /note= "Wild-type Asp substituted by Asn" 567
 Location/Qualifiers 457
 /note= "Wild-type Asp substituted
 Ħ
 glucan; starch; latex; thermoplast paper manufacture; mutant; mutein.
 GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
 D457N/D567T
 by Thr
 useful
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 片
RESULT 14
 Matches
 Query Match
Best Local
 07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
 coating composition;
amyloplast; vacuole;
 Sequence
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 Misc-difference

 mutans glucosyltransferase

 27-AUG-2002
 AAU98035
 AAU98035 standard;
 WPI; 2002-414332/44.
 07-JUN-1995;
 07-JUN-1995;
 11-DEC-1998;
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 Streptococcus mutans
 (NICH/) NICHOLS
 the information in claim 36.
 481
 manufacture, comprises
 Н
 SE
 Similarity
 ANDHISILEAWSDNDTPYL 499
 AIDHLSILEAWSGNDNDYV 19
 1475 AA;
 Conservative
 (first entry)
 2000US-0740274.
 98US-0007999.
98US-0008172.
98US-0009620.
 95US-0482711.
95US-0485243.
 95US-0478704.
 98US-0210361
 ഗ
 571
 Location/Qualifiers
 /note= "Wild-type Asp
 note= "Wild-type Asp substituted by Asn"
 Protein; 1475 AA
 64.6%;
73.7%;
 1;
 Score 73;
Pred. No.
 mutations
 GTFB mutant D457N/D571K.
 Mismatches
 substituted by Lys"
 DB 23;
0.015;
 Length 1475;
 0,
 Gaps
 0
```

Claim 36; Page -; 44pp;

English. protein

an

comprising

рı

glucosyltransferase

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 Ś
 CC (GTF) B polypeptide having changes at position from I448V, D457N, CC D567TP, K1014T, D457N/D5571K, D567T/D571K, CC D567TP, K1014T, D457N/D567TP, D567TP, D57TK/K1014T, CC P1657TK/K1014T, A148V/D457N/D567TP, D57TK/K779C/K1014T, CY 1698/Y17DA/Y17JA, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589B, M47ID M77ID/T589B, and solated polynuclectide which encodes P1 or P2, or its complementary CC polynuclectide, a ribonucleic acid sequence encoding the GTF mutant, and expression cassette, host cell introduced with the vector, a transgenic plant comprising the polynucleotide poperably linked to a commotter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or amaize line deficient in starch biosynthesis, transformed with a gene encoding a glucan comprising a glucan produced in the expression of the vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful corresponded with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the plant, where the vector contains a transit sequence from the produced in the amyloplast of poteto or the vacuole of sugar beet. CC dictars are useful as substitutes for and additions to modified starch the produced in the amyloplast of poteto or the vacuole of sugar beet. CC dictars are useful as substitutes. Unlike prior art techniques, which requires and impart gloss to the paper during coating step.

CC plant the present sequence is not shown in the specification but was created by the in
 Query Match
Best Local Similarity
 Matches
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 Sequence
 AAU98036;
 AAU98036 standard; Protein; 1475 AA
 Misc-difference
 Streptococcus
Synthetic.
 27-AUG-2002
 Misc-difference
 481
 ANDHÉSILEAWSDNDTPYL
 AIDHLSILEAWSGNDNDYV
 glucosyltransferase
 1475
 (first entry)
 mutans
 AA;
 Location/Qualifiers 567
 571
 /note= "Wild-type Asp substituted by Lys'
 note=
 73.7%;
 "Wild-type Asp
 Score 73; DB Pred. No. 0.01
1; Mismatches
 19
 GTFB mutant D567T/D571K
 DB 23;
0.015;
 substituted by Thr"
 Length 1475;
 Indels
 0;
 Gaps
```

0

US2002031826-A1

```
CC 1169A[V170A[V171]A, and K779Q or a GTF D polypeptide having C viabages at positions from T589D, T589E, N47D]V7889D, and C viabages at positions from T589D, T589E, N47D]V7889D, and C viabated polymucleotide which encodes plot plot its complementary. CC an isolated polymucleotide which encodes plot plot or its complementary. CC an expression cassette comprising the sequence encoding the GTF mutant, CC an expression cassette comprising the polymucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant, a paper sizing and/or CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where CC deficient in starch biosynthesis, transformed with a gene encoding a glucan in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a CC comprising the glucan in a plant. The method comprises transforming a glucan in a plant cell under plant growing conditions to produce a regenerated plant with a gene encoding a CC conditions to produce a regenerated plant and inducing expression of the CC plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the CC plant of plant, where the vector contains a transit sequence from the produced in the amyloplast of potato or the vacuole of sugar beet. CC divides a materials that produce themical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically proceding. Moreover, glucans also exhibit thermoplastic centuring candition but was created by the indexer using the GTFB mequence exhibit thermoplastic candition but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
Query Match
Best Local S
Matches 14
 07-JUN-1995;
16-JAN-1998;
-16-JAN-1998;
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, X1014T, D457N/D567T, D457N/D567T, D567T/D571K,
 Claim 36; Page -; 44pp; English.
 Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
 WPI; 2002-414332/44
 20-JAN-1998;
 07-JUN-1995;
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000;
 14-MAR-2002
 Sequence
 (NICH/) NICHOLS
 and the information in claim 36.
 14; Conservative
 Similarity
 1475 AA;
 2000US-0740274
 95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 98US-0210361.
95US-0478704.
95US-0482711.
 တ
 64.6%;
73.7%;
 ۲
 Score 73; DB 23; Length 1475; Pred. No. 0.015;
 Mismatches
 4; Indels
 0;
 ä
 Gaps
 useful
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1 AIDHLSILEAWSGNDNDYV 19

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Search completed: November 13, 2003, 09:38:27 Job time : 38.5166 secs

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Result
No.
 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
 Minimum DB
Maximum DB
 Title:
Perfect score:
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 Database
 Searched:
 Scoring table:
 Sequence:
 Total number of hits satisfying chosen parameters:
 protein -
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 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
 Score
 seq
protein search, using
 length:
length:
 Query
Match Length
 BLOSUM62
Gapop 10.0 ,
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2: pir2:*
3: pir3:*
4: pir4:*
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 4321
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JT0345
T31098
A44811
T30857
 A45866
B33135
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 A41483
 МS
 SUMMARIES
 model
 21
 5.1.6
Compugen Ltd.
 hypothetical prote
hypothetical prote
ATP-dependent exon
bacterial blight-r
toxin B - Clostrid
 glucosyltransteras
dextransucrase (EC
 glucosyltransferas
 glucosyltransferas
 glucosyltransferas
 glucosyltransferas
 probable dextransu
 gtfB protein
 dextransucrase (EC
 glucosyltransferas
 Description
 hypothetical prote
 genome polyprotein
 probable outer mem
probable outer mem
 hypothetical prote hypothetical prote
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 hypothetical prote
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 hypothetical prote hypothetical prote
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 hypothetical prote
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## ALIGNMENTS

glucosyltransferase (EC 2.4.1.-) gtfS precursor - Streptococcus sobrinus C;Species: Streptococcus sobrinus C;Date: 30-Jun-1992 #sequence\_revision 30-Jun-1992 #text\_change 15-Oct-1: C;Accession: A4143 R;Gilmore, K.S.; Russell, R.R.B.; Ferretti, J.J.

#text\_change 15-Oct-1999

A41483

```
C;Accession: A45866
R;Honda, O; Katc, C.; Kuramitsu, H.K.
J. Gen. Microbiol. 136, 2099-2105, 1990
A;Title: Nucleotide sequence of the Streptococcus mutans gtfD gen
A;Reference number: A45866; MUID:91100958; PMID:2148600
A;Accession: A45866
A;Accession: A45866
A;Status: preliminary
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C;Keywords: glycosyltransferase
C;Keywords: glycosyltransferase; hexosyltransferase
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 Infect. Immun. 58, 2452-2458, 1990
A;Title: Analysis of the Streptococcus downei gtfS gene, R;Reference number: A41483; MUID:90316665; PMID:2142479
 A;Gene: gtfS
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
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 C;Accession: B33135; A33128
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene from Streptococcus mutans.
A;Reference number: A33135; MUID:87308013; PMID:3040685
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R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
submitted to the Protein Sequence Database, September 1990
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C;Date: 23-Oct-1990 #sequence_revision 23-Oct-1990 #text_change 15-Oct-1999
 밁
 Ş
 F;1385-1404/Domain:
 R;Simpson, C.L.; Giffard, P.M.; Jacques, N.A. Infect. Immun. 63, 609-621, 1995
A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Accession: T30858
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 Ś
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~ 12
 T30858
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 Conservative
 Conservative
 Conservative
 cp1
 repeat homology
 Streptococcus mutans
 75.0%;
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73.7%;
 64.6%;
75.0%;
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 Score 75;
Pred. No.
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 <CP1>
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 0
 0.0049;
 멂
 .0023;
 2
 4;
 4
 Length 1475;
 Length 1431;
 Length 1577;
 Indels
 Indels
 _change 22-Oct-1999
 least
 two genes coding for
 0
 0
 0;
 Gaps
 Gaps
 Gaps
 0
 0,
 0
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A;Reference number:
A;Accession: T31098
A;Status: preliminary; translated f:
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A;Residues: 1-1508 <MON>
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A;Cross-references: EMBL'AF030129;
A;Cross-references: EMBL'AF030129;
 R;Shīroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene from Streptococcus mutans.
A;Reference number: A33135; MUID:87308013; PMID:3040685
A;Accession: C33135
 C;Species: Streptococcus mutans
C;Date: 31-Mar-1992 #sequence_revision 31-Mar-1992
C;Accession: JT0345; C33135
R;Ueda, S.; Shiroza, T.; Kuramitsu, H.K.
 C;Accession: T31098
R;Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, FEMS Microbiol. Lett. 159, 307-315, 1998
A;Title: Cloning and sequencing of a gene coding for an A;Reference number: Z20981; MUID:98164374; PMID:9503626
 probable dextransucrase (EC 2.4.1.5), extracellular - Leuconostoc mesenteroides
C;Species: Leuconostoc mesenteroides
C;Date: 22-Oct_1999 #sequence_revision 22-Oct-1999 #text_change 11-May-2000
 RESULT 6
 Ş
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C;Keywords: duplication; glycosyltransferase; hexosyltransferase
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F;11253-1272/Domain: cpl repeat homology <CP2>
F;1318-1337/Domain: cpl repeat homology <CP3>
 A; Description: catalyzes the synthesis of both water-soluble and water-insoluble glucans C_i; Superfamily: cpl repeat homology
 A; Molecule type: DNA
A; Residues: 1-1375 < UED>
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 dextransucrase (EC 2.4.1.5) precursor - Streptococcus mutans N_{\ell}Alternate names: sucrose 6-glucosyltransferase
 밁
 밁
 C; Function:
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A;Description: produces dextran composed only of alpha(1-6) glucosidic C;Keywords: glycosyltransferase; hexosyltransferase
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 101-109, 1988
 885
 507
 14;
 AIAHLSILEAWSYNDHQYNK 607
 ANDHLSILEAWSYNDTPYL
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 Conservative
 GS-5
 62.8%;
73.7%;
 61.1%;
 1;
 19
 Score 71; I
Pred. No. 0.
 Score
Pred.
 from
 525
 NID:92766611; PID:92766612; PIDN:AAB95453.1
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 Mismatches
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 No.
 e from Streptococcus PMID:2976010
 DB 2;
0.022;
 B
 DB 2;
.0094;
 #text_change
 Length
 Length 1508
 Indels
 extracellular dextransucrase
 70
14
 (strain
 mutans
 0,
 GS-5)
 Gaps
 GS-5
 0
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 Ä;Residues: Ī-1518 <GIF>
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A;Cross-references: EMBL:Z11873; NID:g47526; PIDN:CAA77900.1; PID:g47527
A:Note: sequence extracted from NCBI backbone (NCBIN:81050, NCBIP:81052)
 glucosyltransferase N - Streptococcus salivarius (fragment) C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_cb
 밁
 Ś
 C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
F;1307-1326/Domain: cpl repeat homology <CP4>
 R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least two A;Reference number: A44811; MUID:92148377; PMID:1838391
 C;Species: Streptococcus salivarius
C;Date: 31-Dec-1993 #sequence revision 31-Dec-1993 #text_change
C;Accession: A44811, S22726; S28809
R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
 glucosyltransferase (EC 2.4.1.-) I - Streptococcus salivarius
 В
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 glucosyltransferase - Streptococcus salivarius C; Species: Streptococcus salivarius
 A44811
 C; Accession: T30552
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 A;Cross-references: EMBL:L35495; NID:g662378; PID:g662379; PIDN:AAC41412.1
C;Genetics:
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 A; Description:
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 A; Molecule type: DNA
A; Residues: 1-1449 <
 A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030
 R;Simpson,
 C; Accession:
 A; Molecule type:
 nfect. Immun.
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Dmitted to the EMBL Data Library, February 1998
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 C.L.;
 12;
 μ
 _
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 63, 609-621, 1995
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 Length 1518;
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 glucosyltransferase ger
 0;
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 genes coding for pri
 Gaps
 Gaps
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 0
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 0;
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F;1513-1532/Domain: cpl repeat homology <C
 R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least
 glucosyltransferase (EC 2.4.1.-) S - Streptococcus C,Species: Streptococcus salivarius C,Date: 16-Sep-1992 Haequence revision 16-Sep-1992 C,Accession: S22737; S28810; E44811; S22727
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 A, Title: Peptide sequences for sucrose splitting and glucan binding within Streptococcus A, Reference number: A38175, MUID:91123227, PMID:1704006
A, Accession: A38175
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A;Experimental source: ATCC 25975
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A;Accession: S22737
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14; Conser
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 54.9%;
57.9%;
 59.3%;
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 two
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 K.; Kagawa,
 21-Jan-2000
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 Gaps
 Gaps
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 DNA topoisomerase (ATP-hydrolyzing) (EC 5.99.1.3) - yeast (Saccharomyces cerevisiae) N;Alternate names: DNA gyrase; DNA topoisomerase II; protein N2244; protein YNL088w C;Species: Saccharomyces cerevisiae C;Date: 30-Sep-1992 #sequence_revision 10-Nov-1995 #text_change 16-Jun-2000 C;Accession: S57534; A25630; S63027; S30866; S65093 R;Soler-Mira, A.; Saiz, J.E.; Ballesta, J.P.G.; Remacha, M. submitted to the EMBL Data Library, June 1995
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A;Giaever, G.; Lynn, R.; Goto, T.; Wang, J.C.
U. Biol. Chem. 261, 12448-12454, 1986
U. Biol. Chem. 261, 12448-12454, 1986
A;Tille: The complete nucleotide sequence of the structural gene TOP2 of y.
A;Reference number: A25630; MUID:86304413; PMID:3017975
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 A; Accession: A25630
 A; Accession: S57534
 A; Reference number: S57533
 ; Leithauser, B.; Keller, K.; Cruz, R.; Danson, M.J.; Hough, Jung, K.H.; Alam, M.; Freitas, T.
Jung, K.H.; Alam, M.; Freitas, T.
Proc. Natl. Acad. Sci. U.S.A. 97, 12176-12181, 2000
A;Authors: Hou, S.; Daniels, C.J.; Dennis, P.P.; Omer, A.D.;
A;Title: Genome sequence of Halbacterium species NRC-1.
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9; Conserv
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D.W.; Maddocks, D.
 NRC-1
 Ebhardt,
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 0;
 0;
 TOP2 of yeast
 Gaps
 H.; Lowe,
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 DNA topo
 Lasky,
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 H.M.; L
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RESULT 15

hypothetical

protein

F20B18.100

Arabidopsis thaliana

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R;Soler-Mira, A.; Saiz, J.E.; Ballesta, J.P.G.; Remacha, M.
Yeast 12, 485-491, 1996
 R;Jannatipour, M.; Liu, Y.X.; Nitis, J.L. submitted to the EMBL Data Library, January 1993 A;Description: The top2-5 mutant of yeast topoisomerase A;Reference number: S30866
 A;Residues: 1-1428 <SOW>
A;Cross-references: EMBL:Z71364; NID:g1301988; PIDN:CAA95964.1;
A;Experimental source: strain 5288C
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R;Wood, D.W.; Setubal, J.C.; Kaul, R.; Monks, erage, G.; Gillet, W.; Grant, C.; Guenthner, I; Karp, P.; Romero, P.; Zhang, S.
Science 294, 2317-2323, 2001
 A;Gene: SGD:TOP2; TOR3;
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 A;Status: nucleic
 A;Accession: S30866
 A;Title: The Genome of the Natural Genetic Engineer Agrobacterium A;Reference number: AB2577; MUID:21608550; PMID:11743193
 ster, E.W.
밁
 8
 A;Genome:
 A;Reference number:
A;Accession: AE3211
 A;Authors: Yoo, H.; Tao,
 A;Molecule type: DNA
A;Residues: 1-366 <KUR>
 A;Status: preliminary
 Superfamily: eukaryotic type
 Comment: Type II DNA topoisomerase
 Experimental source
 Matches
 Query Match
Best Local :
 Matches
 Genetics:
 Query Match
 Gene:
 potF
 Local
 plasmid
 623
 179
 4 HLSILEAWSGNDNDYV 19
 ATP; DNA binding;
 w
 8
 Similarity
 9
 Similarity
 HLKIFHSLQGNDKDYI
 DELSTIMLYQGNDGDYV
 DHLSILEAWSGNDNDYV 19
 source:
 Conservative
 Conservative
 acid sequence not shown
 EMBL:X89016; NID:g887621; PIDN:CAA61422.1; PID:g887623
DNA topoisomerase catalyzes the ATP-dependent transient
 SGD:S0005032; MIPS:YNL088w
 GB:AE008687;
 strain
 TRF3; TOP2-5; MIPS:YNL088w
 Y.; Biddle, P.; Jung, M.; Krespan,
 43.4%;
 42.5%;
 e II
 638
 195
 PIDN: AAL46107.1;
 Score
Pred.
 DNA topoisomerase; phage T4 DNA topoison replication; heterotetramer; isomerase;
 Score 48; I
Pred. No. 9
 (Dupont)
 Mismatches
 Mismatches
 49;
 30
 DB
9.2;
 D.; Chen, L.;
 BB
 ۳.
 2;
 PID:g17743872; GSPDB:GN00188
 6;
 ٠,
 Length 1428
 Length 366;
 Ι
 Τ.,
 encodes
 W . ;
 Wood,
 DNA topoisomerase
 cerevisiae
 PID:g173000
 Levy,
 PID:g1301989;
 Perry,
 0,
 0
 G.E.; Chen, vy, R.; Li,
 tumefaciens
 an
 Gaps
 enzyme resistant
 M.; Gordon-Kamm
 C58,
 chromosome
 phosphoprotei
 breakage,
 м,
К.,
 0
 0
 GSPDB:GN00
 C58
 Dupont)
 (ATP-hyc
 , Woo,
 VIX
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C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Accession: T04254
R;Bevan, M.; Rose, M.; Hempel, S.; Entian, K.D.; Hoheisel, J.; Mewes, H.W.; Mayer, K.F.X submitted to the Protein Sequence Database, March 1999
A;Reference number: Z15263
A;Accession: T04254
A;Molecule type: DNA
A;Residues: 1-378 <-BEV >
A;Cross-references: EMBL:AL049483
A;Experimental source: cultivar Columbia, BAC clone F20B18
C;Genetics:
A;Map position: 4
A;Introns: 326/3
A;Note: F20B18.100
Query Match
Best Local Similarity 41.2%; Pred. No. 9.6;
Matches 7; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

Query Match
Best Local Similarity 41.2%; Pred. No. 9.6;
Matches 7; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

Search completed: November 13, 2003, 09:50:27
Job time: 14.0379 secs
```

```
Minimum DB
Maximum DB
 Searched:
 Scoring table:
 OM protein -
 Result
 Database
 Total number of hits satisfying
 Sequence:
 Perfect score:
 Title:
 Post-processing: Minimum Match 0%
 ö
 on:
 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
 Score
 42.5
41.5
41.5
41.5
41.5
 seq
 75
73
73
71
71
71
72
49
49
44
44
44
44
44
44
 protein search,
 length:
 length:
 BLOSUM62
Gapop 10.0 ,
 US-09-290-049A-13
113
 November 13,
 Match
 127863 seqs,
 Query
SwissProt_41:*
 Maximum Match 100%
Listing first 45 s
 AIDHLSILEAWSGNDNDYVKQ
 Copyright
 Length
 2000000000
1455
 GenCore version 5.1.6 (c) 1993 - 2003 Compugen
 47026705 residues
 2003, 09:31:40
 bursn
 Gapext 0.5
 В
 chosen
 STK4 HUMAN
PGMU DICDI
COAA BACTJ
 GTFS_STRMU
GTFB_STRMU
PIPA DICDI
PHK1 ANASP
K685 MOUSE
K685 HUMAN
UBP2 SCHPO
DPOL METJA
 PHSG_DROME
Y960_HAEIN
VENB_VIBVU
 SC15 DROME
RPO2 FOWPV
Y028 BUCAI
 GTF1_STRDO
TOP2_YEAST
 PGK_LEPIN
 YH2X_SCHPO
 SNE2
 GTF2_STRDO
 GTFC
 7966₋
 summaries
 NCPR_CANTE
 Y347_METJA
 sw model
 SUMMARIES
 CORGI
BUCAI
 HUMAN
 YEAST
PSBMV
 BACSU
 parameters:
 21
 130.561 Million cell updates/sec
 ; Search time 7.56398 Seconds (without alignments)
 Q8wxh0
074343
P18177
034591
 P08987
P13470
 P09523
Q02158
 Q57793
 Description
 075170
 P29152
 P06786
 P29336
 Q8r3q2
 QBYWWJ
 P44084
 p genome po
homo sapien
schizosacch
 leptospira
figwort mos
dictyosteli
anabaena sp
 buchnera ap
corynebacte
buchnera ap
 clostridium
bacillus su
homo sapien
 haemophilus
vibrio viln
 streptococc
 methanococc
 dictyosteli
bacillus th
 streptococc
 methanococc
 homo sapien
schizosacch
 mus musculu
 drosophila
 candida
 fowlpox vir
 drosophila
 saccharomyc
 streptococc
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|   | 45         | 44                 | 43        | 42           | 41                | 40         | 39         | 38                 | 37        | 36                 | ω<br>5     | 34                 |
|---|------------|--------------------|-----------|--------------|-------------------|------------|------------|--------------------|-----------|--------------------|------------|--------------------|
|   | 40         | 40                 | 40        | 40           | 40                | 40         | 40         | 40                 | 40        | 40.5               | 40.5       | 40.5               |
|   | 35.4       | 35.4               | 35.4      | 35.4         | 35.4              | 35.4       | 35.4       | 35.4               | 35.4      | 35.8               | 35.8       | 35.8               |
|   | 302        | 265                | 263       | 261          | 179               | 179        | 179        | 121                | 53        | 1461               | 833        | 310                |
|   | Н          | Н                  | Н         | <del> </del> | ب                 | μ          | j.a        | ۲                  | Н         | <b>_</b>           | ч          | Н                  |
| - | CHI4_SOLTU | UPK_XANAC          | UPK_XANCP | UPK XYLFA    | FLJA_SALTY        | FLJA_SALAE | FLJA SALAB | RL5_SOLME          | YORU TTV1 | TOP2 CANAL         | CW41_YEAST | PIR1_ARATH         |
|   |            | Q8pqw6 xanthomonas |           |              | P52619 salmonella |            |            | P93779 solanum mel |           | P87078 candida alb |            | Q91ps9 arabidopsis |

## ALIGNMENTS

```
RESULT 1
GTFS_STRDO
 + +
 01-DEC-1992 (Rel. 24, Created)
01-DEC-1992 (Rel. 24, Last sequence update)
01-DEC-1993 (Rel. 41, Last annotation update)
Glucosyltransferase-S precursor (EC 2.4.1.5)
REPEAT
DOMAIN
 STRAIN=MFE28;
MEDLINE=90316665; PubMed=2142479;
 Streptococcus downei
 GTFS_STRDO P29336;
 SIGNAL
CHAIN
 EMBL; M30943; AAA26898.1; -
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW binding_1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
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 1,6-GLUCOSE).

- I- SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-BINDING PROTEIN FROM S.MUTANS.

- I- SIMILARITY: Contains 10 cell wall binding repeats.
 -
 ÷
 SEQUENCE FROM N.A.
 NCBI_TaxID=1317;
 Streptococcus.
 Bacteria; Firmicutes;
 Transferase; Glycosyltransferase; Signal; Repeat; SIGNAL 1 36 OR 37 (POTENTIAL).
 Sucrose 6-glucosyltransferase).
 CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

ENZYME REGULATION: GLUCAN SYNTHESIS BY GTF-S IS INDEPENDENT OF PRIMER GLUCAN UNLIKE GTF-I.

DISEASE: DENTAL CARIES.

MISCELLANBOUS: GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA MISCELLANBOUS: GTF-S SYNTHES GLUCANS (ALPHA MISCELLANBOUS: GTF-S SYNTHES GLUCANS (ALPHA MISCELLANBOUS: GTF-S GRUCANS (ALPHA MISCEL
37
157
178
198
 STANDARD;
1365
177
197
1061
 (Streptococcus sobrinus).; Lactobacillales; Streptococcaceae;
GLUCOSYLTRANSFERASE-S.
CELL WALL BINDING 1.
CELL WALL BINDING 2.
CATALYTIC (APPROXIMATE)
 1365
 noved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
 Ą
 (GTF-S) (Dextransucrase)
 Dental
 EMBL outstation
 collaboration
 OF.
 D-
 no
 way
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RESULT 2
GTFD_STRMU
В
 S
 SPATHALA
 Matches
 Query Match
Best Local
 Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439 (2002).

Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439 (2002).

Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439 (2002).

Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439 (2002).

Proc.
 REPEAT
REPEAT
REPEAT
REPEAT
REPEAT
REPEAT
REPEAT
 GTFD_STRMU STANDARD; PRT; 1462 AA. P49331; 069383; 069386; 069389; 069392; 06939 01-FEB-1996 (Rel. 33, Created) 28-FEB-2003 (Rel. 41, Last sequence update) 15-SEP-2003 (Rel. 42, Last annotation update) Glucosyltransferase-S precursor (EC 2.4.1.5) (Sucrose 6-glucosyltransferase).
 SEQUENCE FROM N.A.
STRAIN=MT4239 / Serotype C, MT4245
MT4467 / Serotype E, and MT8148 /
MEDLINE=98231643; Pubmde=9570124 /
The strain of the s
 MEDLINE=91100958; PubMed=2148600;
Honda O., Kato C., Kuramiteu H.K.;
"Nucleotide sequence of the Streptococcus
the glucosyltransferase-S enzyme.";
J. Gen. Microbiol. 136:2099-2105(1990).
 Proc.
 Fujiwara T., Terao Y., Hoshino T., Kawabate
Kimura S., Hamada S.;
"Molecular analyses of glucosyltransferase
 STRAIN=GS-5
 SEQUENCE
 SEQUENCE
 Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J., Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Lin S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti "Genome sequence of Streptococcus mutans UA159, a cariogenic (
 NCBI_TaxID=1309;
 Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
 Streptococcus mutans.
 pathogen.
 MEDLINE=22295063;
 STRAIN=UA159
 Streptococcus mutans.",
 SEQUENCE FROM N.A.
 Microbiol.
 467
 Similarity
 FROM N.A.
 AIDHLSILEAWSGNDNDYVK 20
 AIDHLSILEAWSGNDNDYVK 486
 1062
1083
1150
1170
1225
1289
1309
1331
 Conservative
 ATCC 700610 / Serotype
63; PubMed=12397186;
 STANDARD; PRT; 1462 AA.
; O69386; O69389; O69392; O69398;
el. 33, Created)
 ΑA,
 Lett.
 1352
 1082
1102
1169
1190
1243
1308
 100.0%;
 95.6%;
 151590
 161:331-336(1998).
 0
 ₩,
 CELT
CELT
CELT
CELT
CELT
CELT
CELT
 Score 108;
Pred. No.
 LL WALL BINDING 3.
LL WALL BINDING 5.
LL WALL BINDING 5.
LL WALL BINDING 7.
LL WALL BINDING 7.
LL WALL BINDING 8.
LL WALL BINDING 9.
LL WALL BINDING 9.
LL WALL BINDING 10.
 Mismatches
 5 / Serotype
Serotype C;
 Kawabata S.,
 C
 6.4e-09;
 DB 1;
 mutans
 genes
 (GTF-S) (Dextransucrase)
 þ
 Length 1365;
 Ooshima
 MT4251 / Serotype
 gtfD
 among strains of
 Indels
 CRC64;
 gene
 encoding
 <u>.</u>
 Sobue
 , Qian Y.,
i J.J.;
dental
 Gaps
 0
```

檬

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```
EMBL; M29296; AAA26895.1; -.
EMBL; D88653; BAA26107.1; -.
EMBL; D88656; BAA26107.1; -.
EMBL; D88659; BAA26111.1; -.
EMBL; D88662; BAA26111.1; -.
EMBL; D89979; BAA26121.1; -.
EMBL; D89979; BAA2611.1; -.
EMBL; D89979; BAA26121.1; -.
EMBL; D89979; BAA
 VARIANT
VARIANT
VARIANT
VARIANT
VARIANT
VARIANT
 VARIANT
VARIANT
VARIANT
VARIANT
 Complete
SIGNAL
CHAIN
 VARIANT
VARIANT
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VARIANT
 VARIANT
VARIANT
 REPEAT
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REPEAT
 VARIANT
 VARIANT
 VARIANT
 VARIANT
 DOMAIN
 Transferase; Glycosyltransferase;
 VARIANT
 VARIANT
 VARIANT
 protecme.
 1232
1232
1296
 964
1019
1059
1060
1080
1142
1198
1220
1280
 301
313
317
328
350
 202
255
275
 19
 1462
1423
1295
1359
1423
1423
 964
1019
1060
1060
1080
1142
1198
1220
1280
 301
313
317
328
350
 202
255
275
 132
135
137
 762
 288
KKXYYQ -> EKEYTL (IN STRAIN MT4251).

RXXYYQ -> S (IN STRAIN MT4239).

TDQGSEA -> ADKGNUS (IN STRAIN MT4251).

TDQGS -> ADKGNUS (IN STRAINS MT4239 AND
MT4245).

T -> A (IN STRAINS GS-5, MT4239, MT4245
MT4251, MT4467 AND MT8148).

D -> Y (IN STRAINS MT4251).

E -> K (IN STRAINS MT4251).

E -> K (IN STRAINS MT4251).

G -> R (IN STRAIN MT4251).

G -> R (IN STRAIN MT4251).

G -> R (IN STRAIN MT4251).

S -> V (IN STRAIN MT4251).

S -> V (IN STRAIN MT4251).

S -> V (IN STRAIN MT4251 AND MT4467).

F -> L (IN STRAIN MT4251 AND MT4467).

F -> L (IN STRAIN MT4245).
 MT8148).
A -> S
A -> V
A -> T
MT4251.
V -> L
D -> N
E -> D
MT4251).
 MT4251)
Q -> H
D -> N
E -> K
V -> F
F -> L
 MT4251,
I -> V
MT4251,
K -> E
A -> S
A -> T
T -> I
A -> V
 F -> L
MT4467)
 POTENTIAL.
GLUCOSYLTRANSFERASE-S:
3 X 63 AA APPROXIMATE
 Signal; Repeat; Dental
 S (IN STRAINS GS-5 AND V (IN STRAIN MT4245).
IT (IN STRAINS GS-5, MT4:
I, MT4467 AND MT8148).
I, (IN STRAIN MT4239).
V (IN STRAIN MT4239, MT4239).
U (IN STRAIN MT4239, MT4239).
 (IN STRAINS OF THE CONTROL OF THE CO
 (IN
 NI () NI
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 HUHHH
 N STRAIN MT4467).
N STRAINS MT4239 A
N STRAINS MT4251 A
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STRAIN MT4239).
STRAINS MT4239,
 STRAIN MT4245)
 STRAINS MT4239,
 STRAINS
 GS-5, MT4
MT8148).
GS-5, MT4
MT8148).
 MT4239
 TANDEM REPEATS
 AND MT4467).
 MT4239,
 MT4239, MT4245
 MT4239, MT4245
 AND MT4245).

AND MT8148)

AND MT4245)

MT4245 AND
 MT4239,
 AND
 MT4251 AND
 MT4245
 MT4245
 MT4251)
 MT4245
 AND
 AND
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STATET

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RESULT 3
GIFB STRMU
ID GIFB S
AC P08987
DT 01-NOV
DT 28-FEB
DT 15-SEP
DE Glucos
GN GIFB O
OS Strept
OC Strept
OC STRAIN
RY MEDLIN
RY MED
 Query Match
Best Local S
Matches 15
 GTFB_STRMU STANDARD
P08987; 069381; 069384;
01-NOV-1988 (Rel. 09, C
28-FEB-2003 (Rel. 41, L
15-SEP-2003 (Rel. 42, L
Glucosyltransferase-I p
 15-SEP-2003 (Rel. 42, Last sequence update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
(Sucrose 6-glucosyltransferase).
GTEB OR SMU.1004.
 SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN=MT4239 / Serotype C, MT4245 /
STRAIN=M1239 / Serotype E, and MT8148 / S.
MT4467 / Serotype E, and MT8148 / S.
MEDLINE=98231643; PubMed=9570124;
The serious form of the serious form
 MEDLINE=22295063; PubMed=12397186; Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J., Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti "Genome sequence of Streptococcus mutans UA159, a cariogenic of the complex of the control of the complex of the control of the cont
 VARIANT
VARIANT
VARIANT
VARIANT
VARIANT
 SEQUENCE FROM N.A. STRAIN=UA159 / ATCC 700610 / Serotype C;
 Fujiwara T., Terao Y., HoBnino T., Kawawata Kimura S., Hamada S.; "Molecular analyses of glucosyltransferase
 pathogen.
 Streptococcus mutans."
 MEDLINE=87308013;
Shiroza T., Ueda S
 STRAIN=GS-5;
 SEQUENCE
 FEMS Microbiol, Lett. 161:331-336(1998).
 MEDILINE=87308013; PubMed=3040685; Shiroza T., Ueda S., Kuramiteu H.K.; "Sequence analygis of the gtfB gene U. Bacteriol. 169:4263-4270(1987).
 Streptococcus
 Bacteria; Firmicutes;
 SEQUENCE
 CONFLICT
 TO NATI. ACAD. SCI. U.S.A. 99:14434-14439(2002).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO FLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAL OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CATIES.

MISCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTTORNE OF THE PROPERTY OF TH
 WATER-SOLUBLE GLUCANS
FORMS OF GLUCANS.
SIMILARITY: TO OTHER
BINDING PROTEIN FROM
 l Similarity
 1 AIDHLSILEAWSGNDNDYVK
 FROM N.A.
 AINHLSILEAWSDNDPQYNK 514
 1290
1311
1403
1425
1449
1428
 1462
 Conservative
 STANDARD; PRT; 1476 AA.; 069384; 069387; 069390; 069396; el. 09, Created)
 AA;
 1290
1311
1403
1425
1449
1462
 66.4%;
75.0%;
 163387
 Lactobacillales; Streptococcaceae;
 GLUCOSYLTRANSFERASES S.MUTANS.
 K -> T (IN STRAIN MT4245).
N -> D (IN STRAIN MT4245).
G -> D (IN STRAIN GS-5 AND MT4467).
G -> R (IN STRAIN GS-5).
R -> K (IN STRAIN MT4467).
RYYDKNSGNMVYNKVVTLANGRRIGIDRWGIARYY ->
R (IN REF. 1).
 1;
 X
E
 Score 75;
Pred. No.
 20
 Mismatches
 CE4A279C4D708645 CRC64;
 Serotype
 Kawabata S.,
 _
 from
 Serotype C;
 0.0011;
 DB 1;
 Streptococcus
 genes among strains of
 (GTF-I) (Dextransucrase)
 AND
 Ħ
 4;
 Length 1462;
 Ooshima T.,
 MT4251 /
 SOME
 Indels
 SYNTHESIZES BOTH
 ö
 mutans."
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 Serotype
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 , Qian '
i J.J.;
dental
 BECAUSE
 Gaps
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EMBL; M17361; AAA88588.1; -.
EMBL; D88651; BAA26101.1; -.
EMBL; D88651; BAA26109.1; -.
EMBL; D88657; BAA26109.1; -.
EMBL; D88660; BAA26113.1; -.
EMBL; D88977; BAA26119.1; -.
EMBL; D89977; BAA26119.1; -.
EMBL; D89977; BAA26119.1; -.
EMBL; AE014940; AAN58705.1; -.
EMBL; AE014940; AAN58705.1; -.
InterPoro; IPR002479; CW binding.
InterPoro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 1.
Pfam; PF01473; CW binding 70; 1.
 VARIANT
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 VARIANT
 VARIANT
 VARIANT
 VARIANT
 Transferase; Glycosyltransferase; Signal; Repeat; Dental caries;
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 SIMILARITY: Contains 10 cell wall binding repeats
 proteome.
 1272
 35
1097
1097
1161
1161
11225
1225
1420
1420
63
 968
 963
 399
474
512
519
701
708
938
952
 168
276
 78
86
 1329
1394
 1272
 1086
1158
1163
1168
1182
1182
1234
1263
1263
 34
1476
1051
1476
1130
1470
1210
1215
1275
1340
1470
 970
 395
474
512
512
701
701
708
938
957
 168
276
 78
86
 9999
AND MT8148).

H -> Y (IN STRAINS OF Y -> H (IN STRAINS OF AND MT8148).
 MT8148)
N -> R
I -> T
K -> R
F -> Y
T -> I
A -> V
 5. -> T
T -> T
T -> A
MT4467
Q -> P
I -> P
I -> S
MT4467
S -> F
K -> N
S -> D
 4 S H B H A R R F
 FGKPVE
 AND MT8148)
S -> G (IN
 ADS -> VDG
MT4467).
 AND MT4467)
SV -> NT (1
 POTENTIAL.
GLUCOSYLTRANSFERASE-I.
GLUCAN-BINDING (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE)
 MT4467)
 ļ
 REPEAT.
 TANDEM REPEATS.
 X C O O O X
 T (IN STRAIN MT4239).
W (IN STRAIN MT4239).
Y (IN STRAIN MT9148).
K (IN STRAIN MT8148).
C (IN STRAIN MT8148).
P (IN STRAIN MT4239).
P (IN STRAIN MT4239).
H (IN STRAIN MT8148).
H (IN STRAINS GS-5, MT4
 NI)
 N STRAIN MT4239).
N STRAIN GS-5,
N STRAINS GS-5, MT
D MT8148).
N STRAINS GS-5, MT
D MT8148).
N STRAINS GS-5, MT
D MT8148).
N STRAIN MT4251).
N STRAINS GS-5, MT
 (See http://www.isb-sib.ch/announce,
 N STRAIN MT4239)
N STRAIN MT8239)
N STRAIN MT8148)
 YGTPVA
 (IN
 STRAINS
 STRAINS
 STRAINS
 GS-5,
 GS-5,
 GS-5, MT4239 AND
 STRAINS
 GS-5,
 AND MT4467).
, MT4239, MT4467
 AND MT4467).
, MT4239, MT4467
 MT4239, MT4467
 MT4467
 MT4245,
 MT4245,
 GS-5,
 AND
 MT4251,
 MT4251
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S T T T T T T T

CONFLICT VARIANT VARIANT

CONFLICT

1402

1402

(IN STRAINS GS-5, MT4239, MT4467

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RESULT GTFC\_ST

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481  $\vdash$ 

(ALPHA

BOTH

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Query Match
Best Local S
Matches 14
 SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN=UA159 / ATCC 700610 / Serotype c,
STRAIN=UA159 / ATCC 700610 / Serotype c,
STRAIN=22295063; PubMed=12397186;
MEDLINE=22295063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Qian Y
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti J.J.;
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti J.J.;
Carama sequence of Streptococcus mutans UA159, a cariogenic dental
 SEQUENCE C
 SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN=MT4239 / Serotype C, MT4245
STRAIN=M467 / Serotype E, and M18148 / S
MT4467 / Serotype E, and M18148 / S
MT4167 / Serotype E, and M18148 / S
MT4467 / Serotype E, and M18148 / S
MT4467 / Serotype C, M74245
MT4245
MT42467
MT4245
MT42467
 GTFC_STRMU STANDARD; PRT; 1455 AA. P13470; 069382; 069385; 069388; 069391; 069397; 01-NOV-1988 (Rel. 09, Created) 28-FEB-2003 (Rel. 41, Last sequence update) 15-SEP-2003 (Rel. 42, Last annotation update) Glucosyltransferase-SI precursor (EC 2.4.1.5) (G (Dextransucrase) (Sucrose 6-glucosyltransferase)
 Shiroza I., Ueda S., Kuramitsu H.K.;
"Sequence analysis of the gtfB gene from Streptococcus mutans.";
J. Bacteriol. 169:4263-4270(1987).
-I- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT
TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAN
OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
 MEDLINE=89137980; PubMed=2976010;
Ueda S., Shiroza T., Kuramitsu H.
"Sequence analysis of the gtfC ge
 CONFLICT
SEQUENCE
 Fujiwara T., Terao Y., Hoshino T., Kawabata Kimura S., Hamada S.; Kimura S., Hamada S.; "Molecular analyses of glucosyltransferase Streptococcus mutans.";
 SEQUENCE FROM N.A.
 MEDLINE=87308013; PubMed=3040685
 Streptococcus mutans.
Bacteria; Firmicutes; Lactobacillales;
 GTFC OR SMU.1005.
 NCBI_TaxID=1309;
 AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS. CATALYTIC ACTIVITY: Sucrose + \{(1,6)-alpha-D-glucosyl\}(N) = D-fructose + \{(1,6)-alpha-D-glucosyl\}(N+1).
 SUBCELLULAR LOCATION:
 Microbiol. Lett. 161:331-336(1998)
 69:101-109(1988).
 Similarity
 AIDHLSILEAWSGNDNDYV
 ANDHLSILEAWSDNDTPYL 499
 1310
1476
 1459
570
800
 Conservative
 ĀΑ;
 1310
 1459
570
817
 Kuramitsu H.K.; f the gtfC gene
 64.6%;
73.7%;
 165846
 O69388; O69391; O69397; P05427;
 MT4245 / Serotype
8148 / Serotype C;
 AND MT8148).
Y -> H (IN STRAIN MT44
R -> A (IN REF. 1).
ADQDVRVAASTAPSTDGK -> 1
(IN REF. 1).
H -> L (IN REF. 1).
 MW;
 ٠,
 19
 Pred. No. 0.00
L; Mismatches
 Score
 H (IN STRAIN MT4467).
A (IN REF. 1).
 Kawabata
 from
 Streptococcaceae,
 0.0024;
 DB 1;
 Streptococcus
 genes
 s;
 'n
 (GTF-SI)
 Length 1476,
 Ooshima
 among
 MT4251
 CRC64;
 LIKMFALRLARPHQQMA
 strains of
 mutans GS-5.";
 H
 Serotype
 Sobue
 0
 JE BECAUSE
 Gaps
 ۲.,
 피
 0;
EMBL; M22054; AAA88592.1; --
EMBL; D88655; BAA26102.1; --
EMBL; D88655; BAA26100.1; --
EMBL; D88658; BAA26110.1; --
EMBL; D88651; BAA26114.1; --
EMBL; D89978; BAA26120.1; --
EMBL; AE014940; AAN88706.1; --
EMBL; AE014940; AAN88708.1; --
 VARIANT
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 VARIANT
 VARIANT
 REPEAT
 SIGNAL
 Complete
 entities requires a
 VARIANT
 VARIANT
 Transferase;
 or send an
 InterPro;
 InterPro;
 FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 5 cell wall binding 1
 DISEASE: DENTAL CARIES.
MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE C
1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S S
WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI
 rPro; IPRO02479; CW_binding.
rPro; IPRO0318; Glyco hydro 70.
rPro1473; CW_binding_1, 1.
rPr0324; Glyco hydro 70; 1.
sferase; Glycosyltransferase; Signal;
 proteome.
 1305
1326
1331
 1208
1292
 1126
11126
11169
11227
12227
1253
1318
1318
1166
1166
1166
 601
614
727
734
964
1113
1118
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 1204
 600
 5425
5425
5438
 1369
1326
1331
 34
1455
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1455
11459
1120
1230
1303
1303
1303
1310
1106
1116
 1208
1294
 601
614
727
734
964
1113
1118
1204
 256
425
519
538
545
597
 600
 CATALYTIC (APPROXIMATE)
GLUCAN-BINDING (APPROXIMATE).
2.4 A, 1 C AND 1 AC REPEATS.
A REPEAT.
A REPEAT.
C REPEAT.
C REPEAT.
AC REPEAT.
 I -> V (IN
T -> A (IN
AND MT8148)
 AND M
 DGH ->
MT8148)
 MISSING
 AND MT8148)
 AND MT8148
 GLUCOSYLTRANSFERASE-
 Ļ
 REPEAT (INCOMPLETE).
-> I (IN STRAIN GS-5).
-> L (IN STRAIN M74239).
-> V (IN STRAIN GS-5).
-> A (IN STRAIN GS-5).
-> T (IN STRAIN GS-5).
-> PK (IN STRAINS GS-5, M74467).
-> PK (IN STRAINS GS-5, M74239 AND
 MT8148)
 4 1
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 (IN
(IN
 Î
 (IN STRAINS GS-5 AND MT4467).
 (IN STRAIN MT4245).
(IN STRAIN MT8148).
(IN STRAINS GS-5, MT
 (See http://www.isb-sib.ch/announce/
 STRAIN O
STRAIN O
STRAIN N
STRAIN N
STRAIN N
STRAIN N
STRAIN N
STRAIN N
 STRAIN MT4251).
STRAINS MT425 AND MT4251)
STRAINS MT4245 AND MT4251)
STRAINS MT4245 AND MT451)
STRAINS MT4245, MT4251, MT
 Û
 STRAIN MT8148)
 STRAINS MT4245,
 Repeat; Dental
 STRAINS
 repeats.
 W GS-5)
W MT8148)
W MT8148)
W MT4239)
W MT4239)
W MT4239)
 AND SOME
 GS-5,
 GS-5,
 GLUCANS (AL
 MT4239,
 MT4239,
 SYNTHESIZES
 TO A GLUCAN-
 MT4239 AND
 MT4251, MT4467
 caries;
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FEMS

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MT4467

MT4467

MT4467

MT4467

Gene [2]

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RESULT
GTF2_ST
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 Matches
 Query Match
Best Local
 InterPro;
InterPro;
Pfam; PF01
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 01-AUG-1992 (Rel. 23, Created)
01-AUG-1992 (Rel. 23, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5) ((Sucrose 6-glucosyltransferase).
Streptococcus downei (Streptococcus sobrinus).
 entities requires a license agreement (s or send an email to license@isb-sib.ch).
 Streptococcus sobrinus synthetase).";
J. Bacteriol. 173:989-9
-i- FUNCTION: PRODUCTIO
 VARIANT
VARIANT
VARIANT
VARIANT
 GTF2_STRDO
P27470;
 STRAIN=6715 / Sero
MEDLINE=91123227;
 STRDO
 "Peptide sequences for sucrose splitting and glucan binding streptococcus sobrinus glucosyltransferase (water-insoluble
 NCBI_TaxID=1317;
 Bacteria; Firmicutes;
 SEQUENCE
 CONFLICT
 VARIANT
 SEQUENCE FROM N.A.
 ψı
 Bacteriol, 173:989-996(1991).

Bacteriol, 173:989-996(1991).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE OF THEIR ABILLTY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {1,6}-alpha-D-glucosyl}(N) = D-fructose + {1,6}-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

PISCALLULAR LOCATION: Secreted.

DISEASE: DENTAL CARIES.

MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES BOTH THE STORMS (ALPHA 1,6-GLUCOSE).
 FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 16 cell wall binding repeats.
 D90213; BAA14241.1;
 щ
 14;
 5715 / Serotype G;
=91123227; PubMed=1704006;
Matsumura T., Kodama T.,
 Similarity
 IPR002479; CW_binding.
IPR003318; Glyco_hydro_70.
1473; CW_binding_1; 13.
 AIDHLSILEAWSGNDNDYV 19
 ANDHESILEAWSYNDTPYL 525
 1455
 1377
1398
1424
1424
1439
 Conservative
Glyco_hydro_70; 1
 STANDARD;
 A
 1377
1398
1424
1439
1444
 62.8%;
73.7%;
 162965
 Lactobacillales; Streptococcaceae;
 MW;
 Score 71; DB:
Pred. No. 0.00
1; Mismatches
 S & D & 80
 QRLYFKSNGVQAKGELITERKGRIKYYDDNSGNEVRNRVVR
TSSGNWYYFGNDGYALIGWHVVEGRRVYFDENGVYRYASHD
QRNHWDYDYRRDFGRGSSSAVRFRHSRNGFFDNFFRF ->
 HASILSLMVFRLRESSLQSVKVVSNTMILIPEMKFVIVM
 (IN REF.
 PRT;
 Ohta H., Fukui K.,

 X (IN STRAIN MT8148).
 I (IN STRAIN MT848).
 N (IN STRAIN MT4239).
 I (IN STRAINS MT4239 AND MORE POINT MT8148).

 3CB455A99A4FEC86 CRC64;
 1592
 (See http://www.isb-sib.ch/announce/
 DB 1;
0.0048;
 ΑA
 (GTF-I) (Dextransucrase)
 4;
 Length 1455;
 SOME
 Indels
 Kato K.,
 restrictions
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 and
 EMBL
 A GLUCAN-
 a collaboration
 within
glucan
 MT8148)
 for
 0
 Gaps
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 g
 0;
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RESULT
GTF1_ST
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 Query Match
Best Local
 Matches
 J. Bacteriol. 169:4271-4278(1987).

-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THE TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE OF THEIR ABILLTY TO ADHERE TO SMOOTH SURFACES AND MEDIATE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

-i- CAPALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}{(N)-1} (N) -1.5 SUBCELLULAR LOCATION: Secreted.

-i- DISEASE: DENTAL CARIES.
 use by non-profit institutions as long modified and this statement is not removed. entitles requires a license agreement (See or send an email to license@isb-sib.ch).
 p11001;
01-JUL-1989 (Rel. 11, Created)
01-JUL-1989 (Rel. 11, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
 between the Swiss Institute of Bioinformatics the European Bioinformatics Institute. There a
 Ferretti J.J., Gilpin M.L., Russell R.R.B.;
"Nucleotide sequence of a glucosyltransferase
sobrinus MFe28.";
 REPEAT
REPEAT
 EMBL; M17391;
 This SWISS-PROT entry is copyright. It is produced through
 MEDLINE=87308014; PubMed=3040686;
 NCBI_TaxID=1317;
 Streptococcus
 STRDO
 REPEAT
REPEAT
REPEAT
 DOMAIN
DOMAIN
 SEQUENCE FROM N.A.
 Bacteria; Firmicutes;
 SEQUENCE
 REPEAT
 REPEAT
 Transferase;
SIGNAL
 (Sucrose 6-glucosyltransferase)
 DOMAIN
 MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BYORMS OF GLUCANS.

SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCANBINDING PROTEIN FROM S.MUTANS.

SIMILARITY: Contains 19 cell wall binding repeats.
 STRDO
 _
 11;
 Similarity
 AIDHLSILEAWSGNDNDYV
 ANNHVSIVEAWSDNDTPYL
 1093
1093
1093
1158
1222
1287
1402
1514
 Conservative
 Glycosyl
 AAC63063.1;
 downei
 STANDARD;
 ΑA;
 1592
 1592
1044
1592
1592
1592
1142
1142
1207
1272
1337
1451
 54.9%;
 (Streptococcus sobrinus).
; Lactobacillales; Streptococcaceae;
 176167
 transferase; Signal; Repeat; Dental caries.
 Score 62; DB
Pred. No. 0.14
4; Mismatches
 ₩,
 4
 495
 19
 CATALYTIC (APPROXIMATE)
GLUCAN-BINDING (APPROXIMATE)
 GLUCOSYLTRANSFERASE-I
 POTENTIAL
 PRT;
 'n
 (INCOMPLETE).
BC0A66D079351ECF CRC64;
 X TANDEM REPEATS
 1597
 (See http://www.isb-sib.
 There are no rest
 0.14;
 DB 1;
 B
 Usage
 (GTF-I) (Dextransucrase)
 gene
 4;
 Length 1592;
 and the
 Indels
 γď
 from Streptococcus
 restrictions
 PLAQUE BECAU
 and
 EMBL
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 collaboration
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 outstation
 BECAUSE
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 о'n
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InterPro;

IPR002479; CW\_binding. IPR003318; Glyco\_hydro\_70

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RESULT 7
TOP2_YEAST
 Query Match
Best Local S
Matches 11
 TOP2_YEAST
P06786;
01-JAN-1988
 Transferase;
SIGNAL
CHAIN
 "Structure and mechanism of DNA topoisomerase Nature 379:225-232(1996).
-!- FUNCTION: CONTROL OF TOPOLOGICAL STATES OF
 Gasser S.M., Walter R., Dang Q., Cardenas M.E.; "Topoisomerase II: its functions and phosphorylation."; Antonie Van Leeuwenhoek 62:15-24(1992).
 MEDLINE=96310628; PubMed=8740422; Soler-Mira A., Saiz J.E., Ballesta J.P.G., Remacha M.; Soler-Mira A. aiz J.E., Ballesta J.P.G., Remacha M.; "The sequence of a 17,933 bp segment of Saccharomyces cerevisiae chromosome XIV contains the RHO2, TOP2, MKT1 and END3 genes and five new open reading frames.";
 Berger J.M.,
 MEDLINE=96138378;
 new open reading rrunc.
Yeast 12:485-491(1996).
 WEDLINE-86304413; PubMed=3017975;
Giaever F., Lynn R., Goto T., Wang J.
"The complete nucleotide sequence of
 REPEAT
REPEAT
 REPEAT
REPEAT
 X-RAY CRYSTALLOGRAPHY (2.7 ANGSTROMS) OF MEDLINE=96138378; PubMed=8538787;
 MEDLINE=93073815; PubMed=1332607;
 SEQUENCE FROM N.A
STRAIN=S288c / FY
 yeast DNA
J. Biol. (
 Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccl
Saccharomycetales; Saccharomycetaceae; Saccharomyces
 Saccharomyces cerevisiae (Baker's yeast).
 01-JAN-1988 (Rel. 06, Created)
01-FEB-1996 (Rel. 33, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
DNA topoisomerase II (EC 5.99.1.3).
 SEQUENCE
 REPEAT
REPEAT
 REPEAT
REPEAT
 DOMAIN
DOMAIN
 REVIEW ON PHOSPHORYLATION
 SEQUENCE FROM N.A.
 NCBI_TaxID=4932;
 REPEAT
 DOMAIN
 Pfam;
 BREAKAGE AND SUBSEQUENT REJOINING OF I MAKES DOUBLE-STRAND BREAKS, ESSENTIAL FOR PROPER SEGREGATION OF DAUGHTER CHI
 OR TOR3 OR YNLO88W OR N2244.
 PF01473; CW_binding_1;
PF02324; Glyco_hydro_7(
 ۲
 Similarity
 A topoisomerase II.";
Chem. 261:12448-12454(1986).
 ANNHVSIVEAWSDNDTPYL
 AIDHLSILEAWSGNDNDYV
 39
1099
1099
1099
1163
1163
11227
11292
1406
 Conservative
 Gamblin S.J.,
 Glycosy
 FY1679;
 STANDARD;
 AA;
 1597
1050
1597
1597
1132
1213
1277
1342
1342
1455
1512
 1597
 54.9%;
 177080
 transferase;
 Harrison
 70;
 B REPEAT.
AC REPEAT.
B REPEAT.
AC REPEAT.
AC REPEAT (INCOMPLETE).
A REPEAT (INCOMPLETE).
 MW;
 Score 62; DB Pred. No. 0.14
 501
 19
 AC REPEAT.
AC REPEAT.
AC REPEAT.
 GLUCOSYLTRANSFERASE-I.
CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE)
 POTENTIAL
 REPEAT
 Signal; Repeat; Dental caries.
 S.C.
 1428 AA
 STATES OF DNA BY TRANSIENT
G OF DNA STRANDS. TOPOISOMERASE II
 ...
 the structural
 2
B,
 CHROMOSOMES
 0.14;
 DB 1;
 410-1202
 Wang J.C.; rase II.";
 AND 5 AC REPEATS
 DURING MITOSIS AND MEIOSIS
 4;
 Length 1597;
 Saccharomycetes;
 gene
 TOP2
 0,
 Of.
 Gaps
 0
 Nuclear protein;
NP_BIND 140
ACT_SITE 782
MOD_RES 1087
MOD_RES 1258
MOD_RES 1258
MOD_RES 1266
MOD_RES 1266
MOD_RES 1269
MOD_RES 1272
MOD_RES 1353
MOD_RES 1356
 EMBL; M13814; AAB36610.1; -.
EMBL; X89016; CAA61422.1; -.
EMBL; X89016; CAA6142.1; -.
EMBL; Z71364; CAA95964.1; -.
PIR; S57534; ISBYT2.
PDB; 1BGW; 11-JUL-96.
PDB; 1BGW; 11-JUL-96.
PDB; 1BT; 04-MAY-99.
SGD; S0005032; TOP2.
 SMART; SM00387; 1
SMART; SM00433; 'SMART; SM00434; '
 TURN
 TURN
STRAND
 MOD_RES
 PRINTS; PRO0615; CCAATSUBUNTA.
PRINTS; PR00418; TP12FAMILY.
ProDom; PD000742; DNA_topoisoIV;
 8
 CONFLICT
 CONFLICT
 PROSITE; PS00177;
 : :
 Pfam;
 Pfam;
 somerase;
 MISCELLANEOUS:
 PF00204; DNA_gyraseB; 1.
PF00521; DNA_topoisoIV; 1.
PF02518; HATPase_c; 1.
1408
1423
74
547
837
427
430
438
438
4440
 TOP2c; 1.
 HATPase
 3D-structure
782
1086
11087
11268
11269
11272
11356
11408
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CATALYTIC ACTIVITY: ATP-dependent breakage, of double-stranded DNA.
SUBUNIT: Homodimer.
SUBCELLULAR LOCATION: Nuclear.
PTM: PHOSPHORYLATION ENHANCES THE ACTIVITY.
DECATEMATION ACTIVITY.
relax only negative supercoils. SIMILARITY: Belongs to the type II topoisomerase family
 TOPOISOMERASE I FOR THE RELAXING ACTIVITY. MISCELLANEOUS: Eukaryotic topoisomerase I and
 negative and positive supercoils, whereas prokaryotic enzymes
 TOPOISOMERASE II CAN
 IT STIMULATES
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GO; GO:0000020; P:negative regulation of recombination within...
InterPro; IPR003594; ATPbind ATPase.
InterPro; IPR003957; CSFA NFYB Lopois.
InterPro; IPR001241; DNA topoisoII.
InterPro; IPR002205; DNA\_topoisoIV. GO; GO:0005634; C:nucleus; IDA.
GO; GO:0005716; C:synaptonemal complex; IDA.
GO; GO:0003918; F:DNA topoisomerase (ATP-bydrolyzing) activity; IDA.
GO; GO:000333; P:chromatin assembly/disassembly; IMP.
GO; GO:0006271; P:DNA topological change; IDA.
GO:0006265; P:DNA topological change; IDA.
GO; GO:0007131; P:meiotic recombination; IMP. AMI

TOPOISOMERASE\_II; 1.
omerase; DNA-binding; ATP-binding; Phosphorylation;

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 AC P29152;

OI DEC-1992 (Rel. 24, Created)

DT 01-DEC-1992 (Rel. 24, Last sequence update)

DT 01-DEC-1992 (Rel. 24, Last sequence update)

DT 02-EED-2003 (Rel. 41, Last anotation update)

DE Genome polyprotein [Contains: N-terminal protein (P1); Helper component proteinase (EC 3.4.22.45) (Hc.Pro); Protein P3; 6 kDa protein 1 (RXI); Cytoplasmic inclusion protein (CI); 6 kDa protein 2 (RXI); Genome-linked protein (VPG); Nuclear inclusion protein A (NI-A) (RIA) (RC 3.4.22.44) (49 kDa proteinase) (49 kDa-Pro); Nuclear inclusion protein B (NI-B) (NIB) (RNA-directed RNA polymerase)

DE (BC 2.7.7.48); Coat protein (CP)].

OS pea seed-borne mosaic virus (strain DPD1).

OC Viruses; ssRNA positive-strand viruses, no DNA stage; Potyviridae;
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 44444444444
 Query Match
Best Local S
Matches 8
 {RNA}(N).

-I- CATALYTIC ACTIVITY: Hydrolyzes a Gly-|-Gly bond at its own C-terminus, commonly in the sequence -Tyr-Xaa-Val-Gly-|-Gly, in the processing of the potyviral polyprotein.

-I- PTM: VPG IS COVALENTLY LINKED TO THE GENOMIC RNA.
-I- PTM: THE VIRAL RNA OF POTYVIRUSES IS EXPRESSED AS A SINGLE POLYPROTEIN WHICH UNDERGOES POSTTRANGLATIONAL PROTECUTIC PROCESSING RESULTING IN THE PRODUCTION OF AT LEAST EIGHT INDIVIDUAL PROTEINS.
-I- SIMILARITY: HC PROTEINASE BELONGS TO PEPTIDASE FAMILY C6.
-I- SIMILARITY: NI-A PROTEINASE BELONGS TO PEPTIDASE FAMILY C4.
-I- SIMILARITY: BELONGS TO THE POTYVIRUSES POLYPROTEIN FAMILY.
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NCBI_TaxID=31736;
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 HLSILEAWSGNDNDYV 19
 Conservative
 STANDARD;
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 43.4%;
 2;
 Score 49;
Pred. No.
 PRT;
 Mismatches
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 Length 1428
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InterPro; IPRO0150; Helicase_C4.
InterPro; IPRO0150; Helicase_C4.
InterPro; IPRO01456; Peptidase_C4.
InterPro; IPRO01456; Peptidase_C6.
InterPro; IPRO01592; Poty_Coat.
InterPro; IPRO07095; RNA_Dol_DS_S.
InterPro; IPRO07095; RNA_Dol_DS_S.
InterPro; IPRO07095; RNA_Dol_DS_D.
InterPro; IPRO07094; RNA_Dol_PSUI.
Pfam; PF00271; helicase_C4; 1.
Pfam; PF00863; Peptidase_C4; 1.
Pfam; PF00863; Peptidase_C6; 1.
Pfam; PF00767; Poty_Coat; 1.
Pfam; PF00767; Poty_Coat; 1.
Pfam; PF00560; RNA_DOTYPTASE.
PRINTS; PR00966; NTADOTYPTASE.
SMART; SM00487; DEXDC; 1.
SMART; SM00490; HELICC; 1.
SMART; SM00490; HELICC; 1.
 Coat protein
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 SNE2 HUMAN STANDARD; PRT; 6885 AA.

OBWXHO; QBNIS3; QBNF49; QBFER7; QBWWW3; QBWWW4; QBWWW5; QBVZL4; Q9YAR1;

15-SEP-2003 (Rel. 42, Created)

15-SEP-2003 (Rel. 42, Last sequence update)

15-SEP-2003 (Rel. 42, Last annotation update)

15-SEP-2003 (Rel. 42, Last sequence update)
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 MEROPS; C04.010; -. MEROPS; C06.001; -.
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PIR; JQ1331; (
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 RA Heilig R., Eckenberg R., Petit J.-L., Fonknechten N., Da Silva C.,
RA Cattolico L., Levy M., Barbe V., De Berrardinis V., Ureta-Vidal A.,
RA Pelletier E., Vico V., Anthouard V., Rowen L., Madan A., Qin S.,
RA Sun H., Du H., Pepin K., Artiguenave F., Robert C., Cruaud C.,
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RA Gouyvenoux M., James R., Madan A., Mairey-Estrada B., Mangenot S.,
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RA Wacherie B., Bellemere C., Belser C., Besnard-Gonnet M.,
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RA Wacherie B., Bellemere C., Belser C., Louesse C., Muselet D.,
RA Magdelenat G., Pateau E., Petit E., Sirvain-Trukniewicz P., Trybou A.,
RA Wega-Czarny N., Bataille E., Bluet E., Bordelais I., Dubois M.,
RA Wega-Czarny N., Bataille E., Bluet E., Bordelais I., Dubois M.,
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RA Wega-Crarny N., Bataille G., Roya A., Sainte-Marthe L.,
RA Powert D., Wanderie E., Gauguet G., Wincker P., Saurin W.,
RA Werdier J., Werdier-Discala C., Hillier L., Fulton L.,
Welber T., Waterston R., Hood L., Weissenbach J.,
Whe Now Semence and Analysis of human chromecome 14 "."
A Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
A Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
A Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
A Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
A Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
A Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E,
Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
A Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
A Braha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.
A Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
A Bosak S.A., McEwan P.J., McKernan K., Malek J.A., Gunaratne P.H.,
A Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W
Villalon D. K., Muzny D.M., Sodergren E.J., Lu, Gibbs R.A.,
A Wilthing M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
 Verdier J., Verdier-Discala C., Hillier L., Fulton L., M
Matsuda F., Wilson R., Scarpelli C., Gyapay G., Wincker I
Quetier F., Waterston R., Hood L., Weissenbach J.;
"The DNA sequence and analysis of human chromosome 14.";
Nature 421:601-607(2003).
 Poustka A., Klein M.,
Submitted (SEP-1999)
 MEDLINE=22388257;
 SEQUENCE
 PubMed=12508121;
 SEQUENCE
 TISSUE=Testis;
 SEQUENCE FROM
 SEQUENCE FROM N.A. (ISOFORM 1).
MEDLINE=22296983; PubMed=12408964;
 SEQUENCE FROM N.A. (ISOFORMS 4; 5 AND 7).

MEDLINE=21652858; Pubmed=11792814;

Zhang Q., Skepper J.N., Yang F., Davies J.D., Hegyi L.,

Weissberg P.L., Ellis J.A., Shanahan C.M.;

"Nesprins: a novel family of spectrin-repeat-containing
"Nesprins: a novel family of multiple tissues.";
 cytoskeleton.";
J. Cell Sci. 11
 NCBI_TaxID=9606;
 Homo sapiens (Human).
Bukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
 Zhang Q., Ragnauth
 MBDLINE=22113122; PubMed=12118075; Zhen Y.-Y., Libotte T., Munck M.,
 . Cell
 NUANCE,
 SEQUENCE FROM N.A. (ISOFORMS INTERACTION WITH F-ACTIN.
 , Ragnauth C., Greener M.J., Sprins are giant actin-binding la melanogaster muscle protein 80:473-481(2002).
 FROM N.A. (ISOFORM
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 a grant protein connecting
 114:4485-4498(2001).
 115:3207-3222(2002).
 N.A.
 PubMed=12477932;
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 H.-W., Gassenhuber J., Wiema
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AMEDINE=21154917; PubMed=11230166;

Wilemann S., Weil B., Wellenzeuther R., Gassenhuber J., Glassl S.,

Ansorge W., Boecher M., Bloecker H., Bauersachs S., Blum H.,

Lauber J., Duesterhoeft A., Beyer A., Koehrer K., Strack N.,

Mewes H.-W., Ottenwaelder B., Obermaier B., Tampe J., Heubner D.,

Mambutt R., Korn B., Klein M., Poustka A.;

"Towards a catalog of human genes and proteins: sequencing and
analysis of 500 novel complete protein coding human cDNAs.";

Genome Res. 11:422-435(2001)

Cenome Res. 11:422-435(2001)

Genome Res. 11:422-435(2001)

Genome Res. 11:422-435(2001)

Connectes nuclear organization and
structural integrity. Probable anchoring protein which theters the
nucleus to the cytoskeleton. Connects nuclei to the cytoskeleton

Cytoplasm.

- Isound T. Interacts with F-actin via its N-terminal domain.
 Jikuya H., Takano J., Nomura N., Kiruno N., Yokoi T., Kodaira H., Ninomiya K., Wagateuma M., Kanda K., Kondo H., Yokoi T., Kodaira H., Furuya T., Takahashi M., Kikkawa E., Omura Y., Abe K., Kamihara K., Katsuta N., Sato K., Tanikawa M., Yamazaki M., Sugiyama T., Irie R., Otsuki T., Satto H., Wakamatsu A., Ishii S., Yamamoto J., Isono Y., Kawai-Hio Y., Saito K., Nishikawa T., Kimura K., Yamashita H., Matsuo K., Nakamura Y., Sekine M., Kikuchi H., Murakawa K., Kanehori K., Takahashi-Fujii A., Oshima A., Sugiyama A., Kawakami B. Suzuki Y., Sugano S., Nagahari K., Masuho Y., Nagai K., Isogai T., "NEDO human cDNA sequencing project." Msubo Y., Nagai K., Isogai T., "NEDO human cDNA sequencing project." Submitted (JUL-2002) to the EMBL/GenBank/DDBJ databases.
 "Construction of expression-ready cDNA clones curation of 330 KIAA cDNA clones.";
DNA Res. 9:99-106(2002).
 TISSUE=Brain;
MEDLINE=22158633; PubMed=12168954;
Nakajima D., Okazaki N., Yamakawa J
 Nagase T., Ishikawa K.-I., Suyama M., Kikuno R., Hirosawa M., Miyajima N., Tanaka A., Kotani H., Nomura N., Ohara O.; "Prediction of the coding sequences of unidentified human genes. The complete sequences of 100 new cDNA clones from brain which cofor large proteins in vitro.";
 DNA
 Proc.
 SEQUENCE OF 5754-6885 FROM N.A.
 FROM
 Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C., Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M., Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E., Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.; "Generation and initial analysis of more than 15,000 full-length human and mouse cDNA sequences.";
 MEDLINE=99246063; PubMed=10231032;
 TISSUE=Brain;
 SEQUENCE OF 5709-6885 FROM N.A. (ISOFORM
 TISSUE=Spleen, and
 SEQUENCE
 SUBUNIT: Interacts with F-actin via its N-terminal domain. SUBCELLULAR LOCATION: Type IV membrane protein (Potential). The largest part of the protein is cytoplasmic, while its C-terminal part is associated with the nuclear envelope, most probably the
 ALTERNATIVE PRODUC
Event=Alternative
 outer nuclear membrane. Remains associated envelope during its breakdown in mitotic ce
Note=Produced experimental of
 IsoId=Q8WXH0-1;
 IsoId=Q8WXH0-3;
 IsoId=Q8WXH0-2;
 Natl. Acad.
 6:63-70(1999).
 FROM N.A. (ISOFORM
 cDNA sequences."
 8WXH0-2; Sequence=VSP_007164, experimental confirmation av
 PRODUCTS
 Sci. U.S.A. 99:16899-16903(2002)
 Tongue;
J., Nomura N.,
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16-OCT-2001 (Rel. 40, Last sequence uplication)
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Hypothetical UPF0024 protein Clas Capacity SpBClA4.09.
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STRAIN=972;
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 MEDLINE=21848401; Wood V., Gwilliam
 Schizosaccharomycetales; Schizosaccharomyces.
 Bukaryota; Fungi; Ascomycota; Schizosaccharomycetes;
Schizosaccharomycetales; Schizosaccharomycetaceae;
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 NCBI_TaxID=4896
 Schizosaccharomyces
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 targeting.
SIMILARITY:
SIMILARITY:
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SIMILARITY:
 SIMILARITY: Belongs to the Nesprin family.
SIMILARITY: Contains 1 actin-binding domain.
SIMILARITY: Contains 2 calponin-homology (CH) domai.
SIMILARITY: Contains 1 Klarsicht domain.
SIMILARITY: Contains 13 leucine-rich (LRR) repeats.
SIMILARITY: Contains 9 spectrin repeats.
 adult and fetal liver, stomach and placenta. Weakly expressed skeletal muscle and brain. Isoform 5 is highly expressed in pancreas, skeletal muscle and heart.

DOMAIN: The Klarsicht domain mediates the nuclear envelope
 IsoId=Q8WXH0-9; Sequence=VSP_007159, VSP_007160; TISSUE SPECIFICITY: Widely expressed, with higher level in kidney,
 Name=9; Synonyms=NUANCE-N-33,
 SCHPO
 362
 AL355094;
 Note=No
 IsoId=QBWXHO-7;
 Note=No
 IsoId=Q8WXH0-5;
 w
 IsoId=Q8WXH0-8; Sequence=VSP
 IsoId=Q8WXH0-6; Sequence=VSP 007158, VSP 007165,
Note=No experimental confirmation available;
 IsoId=Q8WXH0-4;
 œ
 Similarity
 an email to license@isb-sib.ch).
 FROM N.A.
 DHLSILEAWSGNDN
 DHLQLREAWDGLDH
 Conservative
 =Q8WXH0-4; Sequence=VSP_007156;
Synonyms=Alpha;
 Synonyms=Gamma
 Synonyms=Beta;
 experimental
 STANDARD;
 -; NOT_ANNOTATED_CDS.
 PubMed=11859360;
R., Rajandream M.
 NOT ANNOTATED
 pombe (Fission yeast).
 42.5%;
57.1%;
 Sequence=VSP_007154, VSP_007163;
 Sequence=VSP_007157,
 375
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 confirmation av
 2,
 Score 48;
Pred. No.
 PRT;
 Mismatches
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 chromosome
 DB 1;
1.2e+02;
 61, VSP 007162; available;
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 VSP_007164,
 Length 6885;
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 Indels
 domains
 VSP_007166;
 VSP_007165
 Stewart
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 Gaps
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 RA Sgouros J., Peat N., Hayles J., Baker S., Basham D., Bowman S.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
RA Collins M., Comon R., Cronin A., Davis P., Feltwell T., Fraser A.,
RA Gollins M., Comon R., Cronin A., Davis P., Feltwell T., Fraser A.,
RA Gentles S., Goble A., Hamlin N., Harris D., Hidalgo J., Hodgson G.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
RA ROIlver K., O'Neil S., Pearson D., Quail M.A., Rabbinowitsch E.,
RA Rollor F., O'Neil S., Pearson D., Quail M.A., Rabbinowitsch E.,
RA Rutherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Rutherford K., Rutter S., Squares S., Stevens K.,
RA Woodward J., Volckaert G., Aert R., Robben J., Grymonprez B.,
RA Woodward J., Vonstreels E., Rieger M., Schaefer M., Mueller-Auer S.,
RA Weltjens I., Vonstreels E., Rieger M., Schaefer M., Mueller-Auer S.,
RA Gable C., Fuchs M., Fritzc C., Holzer E., Moestl D., Hilbert H.,
RA Borzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,
RA Geffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Lucas M., Rochet M., Gaillardin C., Tallada V.A., Garzon A., Thode G.,
RA Daga R.R., Cruzado L., Jimenze J., Sanchez M., del Rey F., Benito J.,
RA Cerrutti L., Lowe T., McComble W.R., Paulsen I., Potashkin J.,
RA Cerrutti L., Lowe T., McComble W.R., Paulsen I., Potashkin J.,
"The genome sequence of Schizosaccharomyces pombe.";
RI Nature 415:871-880(2002)
 Query Match
Best Local S
Matches 10
SEQUENCE FROM N.A.
STRAIN-VPI 10463;
MEDLINE-90326540; PubMed-2374729;
Barroso L.A., Wang S.Z., Phelps C.J., Johnson
"Nucleotide sequence of Clostridium difficile
Nucleic Acids Res. 18:4004-4004(1990).
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the European Bioinformatics Institute. There are no restrictions on its
use by non-profit institutions as long as its content is in no way
modified and this statement is not removed. Usage by and for commercial
entities requires a license agreement (See http://www.isb-sib.ch/announce/
or send an email to license@isb-sib.ch)
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 01-NOV-1990
28-FEB-2003
 P18177;
01-NOV-1990
 Bacteria;
 Hypothetical SEQUENCE 6
 NCBI_TaxID=1496;
 Toxin
 TIGRFAMs; TIGR00094; TIGR00094;
 GeneDB
 InterPro;
 ostridium difficile.
octeria; Firmicutes;
 OR TCDB
 CLODI
 T39858; T39858
 434 SILETWSRSGNQTDYL 449
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 AL031174; CAA20114.1; -.
 PF01142; UPF0024; 1
 10;
 SPombe; SPBC1A4.09; -.
 Similarity
 SILEAW--SGNDNDYV 19
 IPR001656;
 al protein.
680 AA; 76
 (Rel. 16, Created)
(Rel. 16, Last seq
(Rel. 41, Last ann
 Conservative
 STANDARD;
 76438 MW;
 41.6%;
 UPF0024.
 Clostridia;
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58
 sequence update) annotation updat
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 Pred.
 Score 47;
 PRT;
 B4A52DAECEA1B9A6 CRC64;
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 Mismatches
 Clostridiales;
 No.
 2366 AA
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 DB 1;
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 Length 680;
 Clostridiaceae;
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RESULT 12
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 Query Match
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Matches 8
 EMBL; X53138; CAA37298.1; -.
EMBL; X92992; CAA63562.1; -.
EMBL; X92992; CAA43299.1; -.
PIR; A27636; A27636.
PIR; S10317; S10317.
InterPro; IPR002479; CW_binding.
Pfam; PF01473; CW_binding_1; 17.
Pfam; PF04488; Gly_transf_sug; 1.
 C34591;
O34591;
O3-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-MAY-2000 (Rel. 39, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Acetoin:2,6-dichlorophenolindophenol oxidoreductase beta subunit (EC 1.1.1.-) (Acetoin:DCPIP oxidoreductase-beta) (AC:DCPIP OR)
(EC 1.1.1.-) (Acetoin:DCPIP oxidoreductase-beta) (AC:DCPIP OR)
 MEDLINE=97124190; PubMed=8969503; Yamamoto H., Uchiyama S., Sekiguc
 SEQUENCE FROM STRAIN=AC327;
 Bacillus subtilis.
Bacteria; Firmicutes;
 Yamamoto
"Cloning
 MEDLINE=99296597;
 STRAIN=168;
 SEQUENCE
 SEQUENCE
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 [2]
SEQUENCE FROM N.A.
STRAIN=VPI 10463;
VON Eichel-Streiber C.;
 NCBI_TaxID=1423;
 ACOB
 Submitted (JAN-1997) [3]
 Sauerborn
 Eichel-Streiber
 MEDLINE=92293124; PubMed=1603068;
 STRAIN=VPI 10463;
 SEQUENCE OF 1271-2366 FROM N.A.
 Biochemical
 and B
 "Comparative sequence analysis of the
 Bacteriol.
 DISEASE:
 1733
 CALLED A AND CYTOTOXIN B.
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 BACSU
 %=99296597; PubMed=10368162;
4., Oppermann-Sanio F.B., Steinbuchel
mical and molecular characterization
catabolic pathway.";
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 Similarity
8; Conserv
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Uchiyama S., !
sequencing of
 net. 233:260-268(1992)
CLOSTRIDIUM DIFFICILE
 N.A.
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 olic pathway.";
181:3837-3841(1999)
 STANDARD;
 AA;
 с.,
 Laufenberg-Feldmann
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 Bacillales;
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 Pred. No. 1.1e4; Mismatches
 Score 45;
 E1024BD8B8A56ADF CRC64;
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RX MEDLINE-9804403; PubMed=9384377;
RA Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S., RA Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S., RA Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S., RA Borriss R., Boursier L., Brans A., Braun M., Brignell S.C., Bron S., RA Borriss R., Boursier L., Brans A., Braun M., Brignell S.C., Bron S., RA Borriss R., Boursier L., Brans A., Braun M., Capuano V., Carter N.M., RA Borriss R., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A., RA Denizot F., Devine K.M., Dusterhoft A., Ehrlich S.D., Emmerson P.T., RA Entian K.D., Errington J., Fabret C., Ferrari E., Foulger D., RA Denizot F., Devine R.M., Dusterhoft A., Ehrlich S.D., Emmerson P.T., RA Ghim S.Y., Glaser P., Goffeau A., Golightly E.J., Grandi G., RA Guiseppi G., Guy B.J., Haga K., Hailo M.F., Itaya M., Jones L., RA Hilbert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L., RA Levine A., Lardinois S., Lauber J., Lavina M., Jones L., Rashara Y., Klaærr-Blanchard M., Klein C., RA Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V., RA Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V., RA Levine A., Liu H., Masuda S., Mauel C., Medigue R., Purk S.H., Parcecott A.M., Portetelle D., Porwollik S., Prescott A.M., RA Parco V., Pohl T.M., Portetelle B., Rapport G., Rey M., Reynolds S., RA Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadaie Y., RA Raterohi M., Tamakoshi A., Tanaka T., Terpstra P., Tognoni A., RA Rakeuchi M., Tamakoshi A., Tanaka T., Terpstra P., Tognoni A., RA Winters P., Wipat A., Yamanoto H., Yamane K., Yasamoto K., Yata K., Yasanoto K., Yata K., Wata Complete genome sequence of the Gram-positive bacterium Bacillus
 Query Match
Best Local
 Matches
 EMBL; D78509; BAA24295.1; -.
EMBL; Z99108; CAB12636.1; -.
PIR; E69581; E69581.
HSSP; P09061; 1QS0.
Subtilist; B612559; acoB.
InterPro; IPR005476; Transketolase_C.
InterPro; IPR005475; Transketolase_CR.
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 Nature 390:249-256(1997)
-!- FUNCTION: CATALYZES THE 2
CLEAVAGE OF ACETOIN INTO
 Pfam; PF02779; transket pyr; 1.
Pfam; PF02780; transketolase_C;
 EMBL; AF006075; AAC05583.1; -.
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 \frac{1}{1} \frac{1}{1}
 degrees region of the Bacillus subtilis chromosome containing genes for trehalose metabolism and acetoin utilization."; Microbiology 142:3057-3065(1996).
 SEQUENCE FROM N.A.
 PATHWAY:
 SIMILARITY:
 SIMILARITY).
 Similarity
8; Conserv
 catabolism;
 341 AA;
 Acetoin catabolism
TETRAMER OF TWO AL
 0
 OF VARIOUS MULTIENZYME COMPLEXES.
 TO THE BETA SUBUNITS OF 2-0XO-ACID DEHYDROGENASE
 Oxidoreductase; Complete proteome 0 BY SIMILARITY.
 36713 MW;
 38.9%;
 2,6-DICHLOROPHENOLINDOPHENOL-DEPENDENT
O ACETATE AND ACETALDEHYDE (BY SIMILARITY)
 Score 44; DB 1;
Pred. No. 17;
 ALPHA AND TWO BETA
 D2C5B2D549C89EF0 CRC64;
 4
 Length 341;
 SUBUNITS
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REPRESENTATION OF THE PROPERTY 
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RESULT 13

STK4 HUMAN

ID STK4 HUMAN

ID STK4

AC Q1304

AC Q1304

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R GO; GO:0006468; P:Protein amino acid phosphorylation; TAS.
R GO; GO:0007165; P:signal transduction; TAS.
R InterPro; IPR002790; Ser thr pkinase.
R InterPro; IPR002290; Ser thr pkinase.
R InterPro; IPR001245; Tyr pkinase.
R Pfam; PF00069; pkinase; 1.
R PRINTS; PR00109; TYRXINASE.
R PRODOM; PD000001; Prot_kinase; 1.
R PROSITE; PS001007; PROTEIN KINASE ATP; 1.
R PROSITE; PS00108; PROTEIN_KINASE_ST; FALSE_NEG.
R PROSITE; PS00111; PROTEIN_KINASE_DOM; 1.
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 -!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
-!- TISSUE SPECIFICITY: Ubiquitously expressed.
-!- PTM: AUTOPHOSPHORYLATED ON SERINE AND THREONINE RESIDUES.
-!- SIMILARITY: BELONGS TO THE SER/THR FAMILY OF PROTEIN KINASES STE20 SUBFAMILY.
 Submitted (MAR-2000) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ACTIVITY: ATP + a protein = ADP + a phosphoprotein.
-!- ENZYME REGULATION: THE C-TERMINAL NON-CATALYTIC REGION INHIBITS
 (Serine/threonine protein kina
STX4 OR MST1.
Homo sapiens (Human).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
 GO; GO:0004674; F:protein serine/threonine kinase activity; TAS
 Genew; HGNC:11408; STK4.
 HSSP; P24941; 1HCL.
 MIM; 604965;
 SEQUENCE OF 1-435
 MEDLINE=96413604;
Taylor L.K., Wang
"Newly identified
 SEQUENCE FROM N.A.
 J. Biol. Chem. 270:21695-21700(1995)
 Creasy C.L., Chernoff J.; "Cloning and characterization of a to Ste20.";
 Laird G
 to Ste20.
 MEDLINE=95394929; PubMed=7665586;
 SEQUENCE FROM N.A.
 NCBI_TaxID=9606;
 Q13043; Q15802; Q9NTZ4;
16-OCT-2001 (Rel. 40, C
 STK4
 THE KINASE ACTIVITY
 U18297; AAA83254.1; -. U60207; AAB17262.1; -.
 HUMAN
 AL109839;
 36
 AVDHLQDDEAWGG 48
 Acad.
 STANDARD;
 CAB89421.1;
 PubMed=8816758;
H.C., Erikson R.L.;
stress-responsive protein kinases,
 FROM N.A
 Sci. U.S.A.
 kinase Krs-2).
 93:10099-10104(1996)
 Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
 human protein kinase with homology
 487
 (STE20-like kinase
 Krs-1 and
 EMBL outstation
 a collaboration
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 8
 Query Match
Best Local Similarity
 Query Match
Best Local
 Matches
 PRINTS; PR00509; FUNDER PROSITE; PS00710; PGM_PMM; 1.

ISOMETABE; Phosphorylation; Magnesium.

ISOMETABE; Phosphorylation; Magnesium.

ISOMETABE; Phosphorylation; Magnesium.

ISOMETABE; PR00509; FUNDER PMM; 1.

 Q23919;
16-OCT-2001
16-OCT-2001
28-FEB-2003
 Submitted (JUN-1996) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: THIS ENZYME PARTICIPATES IN BOTH THE BREAKDOWN AND SYNTHESIS OF GLUCOSE (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: Alpha-D-glucose 1-phosphate = alpha-D-glucose
 DOMAIN
NP BIND
BINDING
ACT_SITE
 SEQUENCE
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 CONFLICT
 DictyDb; DD05092; pgmA.
InterPro; IPR005841; pG/pMM_mutase.
InterPro; IPR005844; pG_pMM_ABAI.
InterPro; IPR005845; pG_pMM_ABAII.
InterPro; IPR005846; pG_pMM_ABAIII.
InterPro; IPR005843; pG_pMM_CC.
InterPro; IPR005843; pG_pMM_CC.
 HSSP; P00949; 3PMG.
 EMBL; U61984; AAB03667.1;
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 -!- SUBCELLULAR
-!- SIMILARITY:
 STRAIN=AX4;
 SEQUENCE
 NCBI_TaxID=44689;
 Dictyostelium discoideum (Slime mold).
Eukaryota; Mycetozoa; Dictyosteliida; Dictyostelium
 ACT_SITE
DOMAIN
 Loomis W.F.;
 PGMU_DICDI
 SEQUENCE
 Transferase;
 COFACTOR: REQUIRES MAGNESIUM FOR ACTIVITY (BY SIMILARITY) SUBCEILULAR LOCATION: Cytoplasmic (By similarity)
 6-phosphate.
 PF00408; PGM PMM; 1.

PF02878; PGM PMM I; 1.

PF02879; PGM PMM II; 1.

PF02880; PGM PMM III; 1.
 248
 ø
 8
 Similarity
 FROM N.A.
 ELWSDNFTDFVKQ
 EAWSGNDNDYVKQ
 30 281 PROTEIN KINASE; ATP-binding.
30 281 PROTEIN KINASE.
30 44 ATP (BY SIMILARITY).
59 59 ATP (BY SIMILARITY).
149 149 BY SIMILARITY.
373 378 POLY-GIU.
222 222 P -> R (IN REF. 1).
312 312 V -> M (IN REF. 1).
487 AA; 55630 MW; 150758EBC5F77D5C CRC64;
 572
 487
 (Rel.
 Conservative
 AA;
 STANDARD;
 LOCATION: C
 .. 40, Created)
1. 40, Last sequence update
1. 41, Last annotation upda
1. 42, Cast annotation upda
1. 42, Cast annotation upda
 63229 MW;
 38.1%;
 38.9%;
61.5%;
 260
 21
 Cytoplasmic (By similarity).

THE PHOSPHOHEXOSE MUTASES FAMILY.
 Score 44; DB Pred. No. 26; 1; Mismatches
 Score 43;
Pred. No.
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on update)
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44;
 DB
26;
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 phosphomutase) (PGM).
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SEQUENCE
 This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the El the European Bioinformatics Institute. There are no restitute the succession of the succession
 EPITHELIAL CELLS OF INSECTS.
-!- DEVELOPMENTAL STAGE: THE CRYSTAL SPORULATION AND IS ACCUMULATED BO
 "Isolation and characterization of insecticid thuringiensis subsp. jegathesan."; thuringiensis subsp. jegathesan."; Submitted (JAN-1997) to the EMBL/GenBank/DDBJ-i- FUNCTION: PROMOTES COLLOIDOSMOTIC LYSIS B
 Pesticidial crystal protein cry24Aa (Insecticidal delta-endotoxin CryXXIVA(a)) (Crystaline entomocidal protoxin) (Crystal protein) (Insecticidal protein Jeg72) (Fragment).
CRY24AA OR CRYXXIVA(A).
Bacillus thuringiensis (subsp. jegathesan).
Bacteria; Firmicutes; Bacillales; Bacillaceae; Bacillus.
 Pfam; PF03944; endotoxin
Pfam; PF03945; endotoxin
 EMBL; U88188; AAC61891.1; -. InterPro; IPR001178; Endotoxin.
 entities requires a license agreement (s or send an email to license@isb-sib.ch).
 use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
 N-TERMINUS.
-!- SIMILARITY: BELONGS TO THE DELTA ENDOTOXIN FAMILY.
 OF THE SPORE COAT.
 BACTJ
 Pfam; PF00555; endotoxin;
 SEQUENCE FROM N.A. Kawalek M.D., Gill S.S.;
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 roxin; Sporulation.
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 1 AIDHLSILEAWSGNDNDYV 19
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IPR005639; endotoxin_N
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Search completed: November 13, Job time: 8.56398 secs

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Post-processing: Minimum Match 0%
Maximum Match 100%
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3: sp_fungi:*
 November 13, 2003, 09:31:40; Search time 31.6493 Seconds (without alignments) 171.224 Million cell updates/sec
 830525 seqs, 258052604 residues
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 1 AIDHLSILEAWSGNDNDYVKQ 21
 US-09-290-049A-13
113
 Gapop 10.0 , Gapext 0.5
 GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
 sp_mammal:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

# SUMMARIES

| 16     | 15     | 14             | 13     | 12     | 11     | 10     | 9              | 80             | 7              | 9              | υī     | 4      | w              | 2              | <u>,,</u>      | Result<br>No.  |
|--------|--------|----------------|--------|--------|--------|--------|----------------|----------------|----------------|----------------|--------|--------|----------------|----------------|----------------|----------------|
| 62     | 64     | 65             | 66     | 67     | 67     | 69     | 69             | 69             | 69             | 69             | 71     | 73     | 77             | 79             | 108            | Score          |
| 54.9   | 56.6   | 57.5           | 58.4   | 59.3   | 59.3   | 61.1   | 61.1           | 61.1           | 61.1           | 61.1           | 62.8   | 64.6   |                | 69.9           | 95.6           | Query<br>Match |
| 1590   | 2835   | 2057           | 1016   | 1449   | 1449   | 1518   | 1512           | 1508           |                |                | 1554   | 1577   | 1577           | 1575           | 1338           | Length         |
| N      | N      | 2              | N      | N      | N      | N      | N              | N              | N              | N              | N      | N      | N              | 2              | N              | DB.            |
| 059983 | 08G902 | Q9RE05         | Q9LCJ7 | Q55264 | 068542 | Q00600 | Q9WXJ5         | 052224         | Q9EZH5         | Q9L466         | Q8KZL5 | Q55265 | Q54178         | Q9LCH3         | Q9WXJ4         | ID             |
| Q59983 | 089902 | Q9re05         | Q91cj7 | Q55264 | 068542 | Q00600 | Q9wxj5         | 052224         | Q9ezh5         | Q91466         | Q8kz15 | Q55265 | Q54178         | Q91ch3         | Q9wxj4         | Desci          |
|        |        | 05 leuconostoc |        |        |        |        | j5 streptococc | 24 leuconostoc | h5 leuconostoc | 66 leuconostoc |        |        | 78 streptococc | h3 streptococc | j4 streptococc | Description    |

RESULT 2 Q9LCH3

| 45     | 44     | 43     | 42     | 41     | 40                 | 39                 | 38     | 37          | 36     | 35     | 34                 | 33            | 32                 | 31                 | 30                 | 29     | 28     | 27                 | 26     | 25                 | 24     | 23     | 22     | 21                 | 20                 | 19                 | 18                 | 17                 |
|--------|--------|--------|--------|--------|--------------------|--------------------|--------|-------------|--------|--------|--------------------|---------------|--------------------|--------------------|--------------------|--------|--------|--------------------|--------|--------------------|--------|--------|--------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 46     | 46     | 47     | 47     | 47     | 47                 | 48                 | 48     | 48          | 48     | 48     | 48                 | 48            | 48                 | •                  | 48.5               | 49     | 49     | 49                 | 49     | 49                 | 49     | 49     | 49     | 49                 | 58                 | 58                 | 61                 | 62                 |
| 0.     |        |        | 41.6   | •      | 41.6               |                    | •      | 42.5        | •      |        |                    |               | 42.5               | 42.9               | 42.9               | 43.4   | 43.4   | 43.4               | 43.4   |                    |        |        | ٠      | 43.4               | 1.                 |                    | 54.0               | 4.                 |
| 287    | 255    | 3199   | 769    | 769    | 298                | 6885               | 3198   | 956         | 704    | 695    | 394                | 382           | 378                | 576                | 576                | 1428   | 1428   | 1428               | 1428   | 1428               | 1428   | 1428   | 1428   | 232                | 1527               | 1527               | 1599               | 1590               |
| 16     | 11     | 12     | 10     | 10     | υ                  | 4                  | 12     | 4           | 16     | 16     | 10                 | 16            | 10                 | თ                  | 4                  | w      | ω      | w                  | ω      | w                  | W      | w      | w      | 17                 | ν                  | 2                  | N                  | 2                  |
| Q9RK11 | Q9CXL4 | Q85074 | Q9LNU1 | QBLAE1 | Q19058             | Q8WXH0             | Q9IW34 | QBN1S3      | Q9K1Z6 | Q9Z9G1 | Q94KJ2             | <b>Q8UJQ6</b> | Q9SZH3             | Q95LP3             | Q96DX4             | Q8TG43 | Q8TG47 | Q8TF86             | Q8TG56 | Q8TG53             | Q8TG44 | Q8TG46 | Q8TG58 | Q9HSM9             | Q8KRE1             | Q9ZAR4             | Q00599             | Q55263             |
| stre   | สมเล   |        |        | -      | Q19058 caenorhabdi | Q8wxh0 homo sapien | pea    | nomo sapien |        |        | Q94kj2 arabidopsis |               | Q9szh3 arabidopsis | Q95lp3 macaca fasc | Q96dx4 homo sapien |        |        | Q8tf86 saccharomyc |        | Q8tg53 saccharomyc |        |        |        | Q9hsm9 halobacteri | Q8krel leuconostoc | Q9zar4 leuconostoc | Q00599 streptococc | Q55263 streptococc |

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|----------------------|----------------------|-------------------------------------------------------------------------|---------------|------|------------------------------------------|------------------------|---------------------------|-------------|----------------------|----|---------------|-----------------|----------------|------------------------|---------------|---------------|-------|-------------------------|-----------------|-----------------|---------------|------------------|
| 437 AII              | 1 AII                | Query Match<br>Best Local Simi<br>Matches 20;                           | id.<br>NCE    |      | <pre>InterPro; IPR0 Pfam; PF01473;</pre> | InterPro; II           | EMBL; AB0261              | "S.cricetus | Inoue M., Fu         | CO | SEQUENCE FROM | NCBI_TAXID=1333 | Streptococcus. | Bacteria; Firmicutes;  | Plasmid pAM1. | Streptococcus | GTFS. | 01-OCT-2002             | 01-NOV-1999     | 01-NOV-1999     | Q9WXJ4        | ILT 1            |
| AIDHLSILEAWSGNDNDYVK | AIDHLSILEAWSGNDNDYVK | 95.6%; S<br>Similarity 100.0%;<br>0; Conservative 0;                    | 8 AA; 148558  |      | 03318;<br>CW bin                         | IPR002479; CW_binding. | AB026123; BAA77236.1; -   | transfer    | Fukui K., Miyagi A.; |    | M N.A.        | . 5.5.5;        | . is.          | icutes;                |               | s criceti.    |       | (TrambLrel. 22,         | (TrEMBLrel. 12, | (TrEMBLrel. 12, | PRELIMINARY;  |                  |
| 456                  | 20                   | Score 108; DB 2<br>Pred. No. 4e-08<br>; Mismatches                      | ٠.            | , 1. | dro_70.                                  | ng.                    | Public deriparty / public | and         |                      |    |               |                 |                | Lactobacillales; Strep |               |               |       | Last annotation update) |                 | Created)        | PRT; 1338 AA. |                  |
|                      |                      | 2; Length 1338;<br>)8;<br>0; Indels 0;                                  | .5D99B CRC64; |      |                                          |                        | ט עמרמטממפט.              | genes."     |                      |    |               |                 |                | Streptococcaceae;      |               |               |       | update)                 | update)         |                 |               |                  |
|                      |                      | Gaps                                                                    |               |      |                                          |                        |                           |             |                      |    |               |                 |                |                        |               |               |       |                         |                 |                 |               |                  |

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 J. Bacterial. 174:3577-3586(1992).
EMBL; U12643; AAC43483.1; -.
EMBL; M89776; AAA26969.1; -.
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 18.
Pfam; PF02324; Glyco hydro 70; 1.
 Q9LCH3;
Q9LCH3;
01-OCT-2000
01-OCT-2000
 STRAINS-ATCC10557;
MEDLINE-20231779; PubMed=10768934;
MEDLINE-20231779; PubMed=10768934;
Fujiwara T., Hoshino T., Ooshima T., Sobue S., Hamada S.;
Fujiwara T., Hoshino T., Ooshima T., Sobue S., Hamada S.;
"Purification, characterization, and molecular analysis of the encoding glucosyltransferase from Streptococcus oralis.";
Encoding glucosyltransferase from Streptococcus oralis.";
Infect. Immun. 68:2475-2483(2000).
 MEDLINE=92276337, PubMed=1534326;
Sulavik M.C., Tardif G., Clewell D.B.;
"Identification of a gene, rgg, which a
glucosyltransferase and influences the
 01-NOV-1996 (TrEMBLrel.
01-NOV-1996 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
 InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 17.
Pfam; PF023224; Glyco_hydro_70; 1.
 Streptococcus.
NCBI_TaxID=1303;
 Streptococcus oralis.
 Glucosyltransferase.
 gordonii Challis.";
J. Bacteriol. 174.3
 MEDLINE=96157084; PubMed=8586195;
Vickerman M.M., Sulavik M.C., Clewel
"Molecular analysis of Streptococcus
 Q54178 PRE
Q54178; Q54247;
 SEQUENCE FROM N.A.
 Bacteria; Firmicutes;
 SEQUENCE OF 1-96 FROM N.A. STRAIN=CHALLIS;
 STRAIN=CHALLIS;
 Bacteria; Firmicutes;
 Streptococcus gordonii
 Glucosyltransferase.
 Transferase.
 Dev. Biol. Stand. 85:309-314(1995)
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 SEQUENCE FROM N.A.
 NCBI_TaxID=29390;
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01-NOV-1996
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01-OCT-2002
Mukasa H., Shiroza T., Abiko Y.; "Cloning and nucleotide sequence sobrinus gtfU gene that produces glucan.";
 GTFU.
 ProDom; PD153432; CSurface_antigen; 1.
Signal; Transferase.
SIGNAL 1 38 POTENTIAL
 Infect. Immun. 63:609-621(1995).

EMBL; L35928; AAC41413.1;

InterPro; IPR004829; CSurface_antigen.
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 11.
Pfam; PF02324; Glyco hydro 70; 1.
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 "Streptococcus salivarius ATCC 25975 possicoding for primer-independent glucosyltra: Infect Tamus Coccins Cocc
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 MEDLINE=95122197; PubMed=7822030; Simpson C.L., Giffard P.M., Jacqu
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 Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
 Streptococcus.
NCBI_TaxID=1310;
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 Streptococcus sobrinus
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 MEDLINE=21958684; PubMed=11960691;
Hanada N., Fukushima K., Nomura Y.,
Mukasa H., Shiroza T., Abiko Y.;
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 1 AIDHLSILEAWSGNDNDYVK 20
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01-MAR-2001
SEQUENCE FROM N.A.
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Kim H.-S., Kim D., Ryu H.-J., Robyt J.F.,
"Leuconostoc mensenteroides B-742CB, a dextransucrase genuconostoc mensenteroides genuconostoc mensente
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InterPro; IPR00318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 14.
Pfam; PF02324; Glyco hydro 70; 1.
Glycosyltransferase; Transferase.
SEQUENCE 1477 AA; 164887 MW; E6E
 NCBI_TaxID=1245;
 Bacteria; Firmicutes;
 Dextransucrase Dsrb742.
DSRB742.
 glucosyltransferase from Leuconostoc mesentero
submitted (CT-1999) to the EMBL/GenBank/DDBJ
EMBL; AJ250172; CAB76565.1; -
 Leuconostoc mesenteroides
 SEQUENCE FROM N.A. STRAIN=NRRL B-1355;
 NCBI_TaxID=1245;
 Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lactobacillales; Leuconostoc
 InterPro; IPR002479; CW binding.
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 synthesizing only a a(1-6) glucan."; FEMS Microbiol. Lett. 0:0-0(1998).

EMBL; AF030129; AAB95453.1; -...

InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco-hydro-70.

Pfam; PF02324; Glyco-hydro-70; 1.

Glycosyltransferase; Transferase.

SEQUENCE 1508 AA; 168511 MW; E70CE
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 Q9WXJ5;
01-NOV-1999
01-NOV-1999
01-OCT-2002
 052224;
01-JUN-1998
01-JUN-1998
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 Inoue M., Fukui K., "S.cricetus glucosy
 SEQUENCE FRO
STRAIN=HS-6;
 Bacteria; Firmicutes;
 Streptococcus criceti.
 GTF-S.
 Monchois V., Remaud-Simeon M., Monsan Proceeding and sequencing of a gene codification dextransucrase (DSRB) from Leuconostoc
 Streptococcus.
NCBI_TaxID=1333;
 Plasmid pAM1.
 Q9WXJ5
 InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding I; 14.
Pfam; PF02324; Glyco hydro 70; 1.
SEQUENCE 1508 AA; 168542 MW; E2FCFA0F87AE4F3A CRC64;
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 SEQUENCE FROM N.A
 NCBI_TaxID=1245;
 Bacteria; Firmicutes; Lactobacillales;
 Glucosyltransferase
 052224
 EMBL; AF294469; AAG38021.1;
 Leuconostoc mesenteroides.
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 Giffard P.M., Simpson C.L., Milward C.P., Jacques N.A.;

"Molecular characterization of a cluster of at least two
glucosyltransferase genes in Streptococcus salivarius ATCC 25975.";

J. Gen. Microbiol. 137:2577-2593(1991).

-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO
PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAÇUE BECAUSE OF
THEIR ABILITY TO ADHERE TO SWOOTH SURFACES AND MEDIATE THE
AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

-i- CATALYTIC ACTIVITY: SUCROSE + (1,6)-ALPHA-D-GLUCOSYL)(N) = D-
 REPEAT
 REPEAT
REPEAT
 FRICTOSE + ((1,6)-ALPHA-D-GLUCOSYL) (N+1).
-!- SUBCELLULAR LOCATION: EXTRACELLULAR.
-!- DISEASE: DENTAL CARIES.
EMBL; Z11873; CAA77900.1; -.
EMBL; M64111, AAA26896.1; -.
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01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-CCT-2002 (TrEMBLrel. 22, Last annotation update)
Glucosyltransferase I (EC 2.4.1.5) (GTF) (Dextransucrase) (Sucrose
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Pfam; PF01473; CW binding 1; 13.
Pfam; PF02324; Glyco hydro 70; 1.
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 00600
 SEQUENCE
 501
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24; G1ycosylt
1307 148
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1339 1
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 AB026123; BAA77237.1;
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 AIDHLSILEAWSGNDNDY 18
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 1512 AA;
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 1338
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1403
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66.7%;
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 61.1%;
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RESULT 11

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Matches 14; Conserv
 Simpson C.L., Giffard P.M., Jacques N.A.;
Simpson C.L., Giffard P.M., Jacques N.A.;
Streptococcus salivarius ATCC 25975 possesses at least two genes coding for primer-independent glucosyltransferases.";
Infect. Immun. 63:609-621(1995).
IMBL; iJ35495; AAC41412.1; -..
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01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Alternansucrase (EC 2.4.1.140).
 "Sequence analysis of the gene encoding alternansucrase, a sucrose glucosyltransferase from Leuconostoc mesenteroides NRRL B-1355."; FEMS Microbiol Lett. 182:81-85(2000).
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Copyright (c) 1993 - 2003 Compugen Ltd.
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US-09-499-203-2
US-09-604-957-5
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US-09-740-274-2
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 Sequence 2, Application US/09008172

Patent No. 6127602

GENERAL INFORMATION:

APPLICANT: Nichols, Scott E.

TITLE OF INVENTION: Substitutes for Modified Starch and TITLE OF INVENTION: Latexes in Paper Manufacture FILE REFERENCE: 0358D

CURRENT APPLICATION NUMBER: US/09/008,172

CURRENT APPLICATION NUMBER: US/09/008,172

CURRENT FILING DATE: 1998-01-16

FARLIER APPLICATION NUMBER: 08/482,711

BARLIER APPLICATION START OF SEC ID NOS: 2

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 US-09-604-957-4
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 SOFTWARE: FastSEQ for Windows Version 3.0
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TYPE: PRT
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|            | 1278<br>4566<br>4456<br>4456<br>5356<br>679<br>679<br>679<br>679<br>679<br>679<br>679<br>679<br>679<br>67                                                                                                                                                                                                                                                                                                                                                                                             | 929               |
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#### ; TYPE: PRT; ORGANISM: Streptococcus mutans US-09-604-957-4 SOFTWARE: PatentIn Ver. 2.1 SEQ ID NO 4 GENERAL INFORMATION: Sequence 4, Application US/09604957 Patent No. 6486314 CURRENT APPLICATION NUMBER: US/09/604,957 CURRENT FILING DATE: 2000-06-28 PRIOR APPLICATION NUMBER: 00201871.1 PRIOR FILING DATE: 2000-05-25 NUMBER OF SEQ ID NOS: 17 APPLICANT: RAHAOUI, HAKIM APPLICANT: LEER, ROBERT-JAN TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388 APPLICANT: VAN GEEL-SCHUTTEN, G APPLICANT: DIJKHUIZEN, LUBBERT APPLICANT: RAHAOUI, HAKIM 1 AIDHLSILEAWSGNDNDYVK 20 Similarity AINHLSILEAWSDNDPQYNK 94 Conservative 66.4%; 75.0%; Score 75; DB Pred. No. 0.000 1; GERRITDINA HENDRIKA ), 00053; 4; DB 4; Length 545; Indels 0 Gaps

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APPLICANT: NICHOIS, Scott E.
APPLICANT: NICHOIS, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Pap.
FILE REFERENCE: 0357CRD
CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
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PRIOR FILING DATE: 1998-01-00
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 08/485,243
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 ; ORGANISM: Streptococcus mutans US-09-008-172-2
 US-09-740-274-6
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EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
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CURRENT FILING DATE: 1998-12-11
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EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Sta:
TITLE OF INVENTION: Latexes in Paper Manufacture
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US-09-740-274-6
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Patent No. 6087559
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APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0356D
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CURRENT FILING DATE: 1998-01-16
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EARLIER FILING DATE: 1995-06-07
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches and
TITLE OF INVENTION: Latexes in Paper Manufacture
 PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
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APPLICANT: Giffard
APPLICANT: Jacques
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PRIOR FILING DATE: 1995-06-07
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 FILE REFERENCE:
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
 APPLICANT: Simpson, Christine Lynn
APPLICANT: Giffard, Philip Morrison
APPLICANT: Jacques, Nicholas Anthony
TITLE OF INVENTION: Genetic Manipulation of Plants to
TITLE OF INVENTION: Increase Stored Carbohydrates
 TYPE: PRT
 NUMBER OF SEQUENCES: 2
CORRESPONDENCE ADDRESS:
ADDRESSEE: Griffith Hack & Co
STREET: Level 8, 168 Walker Street
CITY: No. 5981838th Sydney
 FILING DATE:
 FILING DATE:
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 481 ANDHLSILEAWSDNDTPYL 499
 1 AIDHLSILEAWSGNDNDYV 19
 1 AIDHLSILEAWSGNDNDYV 19
 Similarity
 Application US/08793824
 FastSEQ for Windows Version 3.0
 Conservative
 0357CRD
 1995-06-07
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1998-01-16
 1998-01-20
 1998-12-11
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73.7%;
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73.7%;
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 09/007,999
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TELEX: 26547

INFORMATION FOR SEQ ID NO: 2:

SEQUENCE CHARACTERISTICS:

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 NUMBER OF SEQ ID NOS: 6
SOFTWARE: FASTSEQ for Windows Version 3.0
SEQ ID NO 4
LENGTH: 1375
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Best Local Similarity 73.
Matches 14; Conservative
 Sequence 4, Applic
Patent No. 6284479
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Best Local Similarity
 APPLICANT: Nichols,
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EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
 CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
 EARLIER APPLICATION NUMBER: 08/482,711 EARLIER FILING DATE: 1995-06-07
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OPERATING SYSTEM: PC-DOS/MS-DOS
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 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
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 FILING DATE:
CLASSIFICATION: 800
 TOPOLOGY: not relevant
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 Substitutes for Modified Starches
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APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
ITITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
ITITLE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
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PRIOR APPLICATION NUMBER: 09/007,999
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PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
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PRIOR FILING DATE: 1995-06-07
Query Match
Best Local Similarity
Thes 12; Conserva
 ; TYPE: PRT ; ORGANISM: Leuconostoc mesenteroides US-09-604-957-6
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US-09-604-957-6
 US-09-740-274-4
 Sequence 6, Application US/09604957
Patent No. 6486314
GENERAL INFORMATION:
 NUMBER OF SEQ ID NOS:
SOFTWARE: FastSEQ fo:
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CURRENT FILING DATE: 2000-12-19
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 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA APPLICANT: DIJKHUIZEN, LUBBERT
 PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 1995-C
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 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and
 TYPE: PRT ORGANISM: streptococcus mutans
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US-09-499-203-2
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 SOFTWARE: PatentIn Ver. 2.1
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APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
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 APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, MARKIN
APPLICANT: KNUTH, Karcla
TITLE OF INVENTION: Nucleic Acid Molecules Encoding Alternansucrase
FILE REFERENCE: 147-196P
CURRENT FILING DATE: 2000-02-08
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CURRENT FILING DATE: 2000-06-28
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
 APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
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 APPLICANT: KOSSMANN, Jens
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APPLICANT: Griffais, R.

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FILING DATE: 16-MAR-1995

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FILING DATE: 02-DEC-1993

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APPLICANT: STAFFORD,
TITLE OF INVENTION:
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 APPLICANT:
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ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
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APPLICATION NUMBER: 1
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 ZIP: 94104
 572 DHMNÍRWEWIGNDN 585
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 KINK, JOHN A.
THALLEY, BRUCE S.
PADHYE, NISHA V.
FIRCA, JOSEPH R.
 STAFFORD, DOUGLAS C.

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TELEFAX: (415) 397-8338
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TYPE: amino acid
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Search completed: November 13, 2003, 09:48:01 Job time: 14.6351 secs

GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

# SUMMARIES

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| ហ  | 65                                                                                  | 57.5                                                          | 584                                                                                        | 10                                                 | US-09-995-749A-                                                                                                                                                                                           | .12                                                                                                                                                               |
| 6  | 58                                                                                  | 51.3                                                          | 522                                                                                        | 10                                                 | US-09-995-749A-                                                                                                                                                                                           | -11                                                                                                                                                               |
| 7  | 48.5                                                                                | 42.9                                                          | 427                                                                                        | <u>1</u>                                           | US-09-813-153-1                                                                                                                                                                                           | 31                                                                                                                                                                |
| 00 | 45                                                                                  | 39.8                                                          | 58                                                                                         | 9                                                  | US-09-764-887-16                                                                                                                                                                                          | ü                                                                                                                                                                 |
| 9  | 45                                                                                  | 39.8                                                          | 58                                                                                         | 15                                                 | US-10-073-961-1                                                                                                                                                                                           | 63                                                                                                                                                                |
| 10 | 45                                                                                  | 39.8                                                          | 2366                                                                                       | 15                                                 | US-10-011-366-1                                                                                                                                                                                           |                                                                                                                                                                   |
| 11 | 44                                                                                  | 38.9                                                          | 207                                                                                        | 12                                                 | US-10-225-810-2                                                                                                                                                                                           | æ                                                                                                                                                                 |
| 12 | 44                                                                                  | 38.9                                                          | 448                                                                                        | 12                                                 | US-10-225-810-44                                                                                                                                                                                          | 4                                                                                                                                                                 |
| 13 | 44                                                                                  | 38.9                                                          | 487                                                                                        | 9                                                  | US-09-810-808-8                                                                                                                                                                                           |                                                                                                                                                                   |
| 14 | 44                                                                                  | 38.9                                                          | 554                                                                                        | 11                                                 | US-09-813-408-28                                                                                                                                                                                          | œ                                                                                                                                                                 |
| 15 | 43                                                                                  |                                                               |                                                                                            |                                                    |                                                                                                                                                                                                           |                                                                                                                                                                   |

US-09-740-274-6
; Sequence 6, Application US/09740274
; Patent No. US20020031826A1

RESULT

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## ALIGNMENTS

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PRIOR FILING DATE: 2000-05-25
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CURRENT FILING DATE: 2001-11-29
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PRIOR FILING DATE: 2000-06-28
 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA APPLICANT: DICHUIZEN, LUBBERT APPLICANT: RAHAOUI, HAKIM APPLICANT: RAHAOUI, HAKIM APPLICANT: LEER, ROBERT-JAN TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
 FILE REFERENCE: BO43388-CIP
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PRIOR TILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1998-01-20
PRIOR FILING DATE: 1998-01-20
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NUMBER OF SEQ ID NOS: 6
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
FILE REFERENCE: 0357CRD
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 Scott E.
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US-09-995-749A-12
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 US-09-740-274-4
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NUMBER OF SEQ ID NOS: 19
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FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUT, HAKIM
APPLICANT: LBER, ROBERT-JAN
 PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
 SOFTWARE:
 NUMBER OF SEQ ID NOS:
 PRIOR FILING DATE:
 PRIOR APPLICATION NUMBER:
 PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 1998-1
 CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
 TITLE OF INVENTION:
 SOFTWARE: PatentIn Ver. 2.1
 ORGANISM: streptococcus mutans
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 Conservative
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 1995-06-07
 1998-12-11
 62.8%;
73.7%;
 Scott E.
 Glucan-containing Compositions and Paper
 2000-12-
57.5%;
 09/210,361
 08/482,711
 09/008,172
 08/485,243
Score 65;
Pred. No.
 Score 71;
Pred. No.
 Mismatches
 DB 9;
 DB 10;
 Length 1375;
 Length 584;
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US-09-813-153-131
 US-09-995-749A-11
 US-09-995-749A-11
 Sequence 131, Publication No.
 SEQ ID NO 11
LENGTH: 522
 Matches
 Query Match
Best Local Similarity
 Matches
 SOFTWARE:
 GENERAL INFORMATION:
 Sequence 11, Application U
Patent No. US20020155568A1
 TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES FILE REFERENCE: BO43388-CIP CURRENT APPLICATION NUMBER: US/09/995,749A CURRENT FILING DATE: 2001-11-29 PRIOR APPLICATION NUMBER: 09/604,957 PRIOR FILING DATE: 2000-06-28
 PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
 NUMBER OF SEQ ID NOS: 298
 PRIOR FILING DATE: 1999-07-29
 CURRENT APPLICATION NUMBER: US/09/813,153
CURRENT FILING DATE: 2001-03-21
 APPLICANT: Rosen et al. TITLE OF INVENTION: 67 Human secreted proteins FILE REFERENCE: PZ023
 SOFTWARE: PatentIn Ver. 2.1
 APPLICANT:
 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
 PRIOR APPLICATION NUMBER: 60/
PRIOR FILING DATE: 1998-01-30
 TYPE: PRT ORGANISM: Leuconostoc mesenteroides
LENGTH:
NO 131
TH: 427
 APPLICATION NUMBER: 60/073,170 FILING DATE: 1998-01-30
 APPLICATION NUMBER: 60/073,161 FILING DATE: 1998-01-30
 FILING DATE: 1998-01-30
APPLICATION NUMBER: 60/073,162
FILING DATE: 1998-01-30
 FILING DATE: 1998-01-30
APPLICATION NUMBER: 60/073,167
 FILING DATE: 1998-01-30
APPLICATION NUMBER: 60/073,165
 APPLICATION NUMBER: 60/073,160
 APPLICATION NUMBER: 60/073,164
 FILING DATE: 1998-01-30
 APPLICATION NUMBER: 60/073,159
 INFORMATION:
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 12;
 PatentIn Ver.
 ANQHISILEDWSHNDPLYV 93
 AIDHLSILEAWSGNDNDYV 19
 HISILEDWNGKDPQYVNQ 95
 HISILEAWSGNDNDYVKQ
 RAHAOUI, HAKIM
LEER, ROBERT-JAN
 DIJKHUIZEN, LUBBERT
 Application US/09995749A
 Application US/09813153
5. US20030045459A1
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 US-10-073-961-163
 US-09-764-887-163
 US-09-813-153-131
 CURRENT APPLICATION NUMBER: US/10/073,961
CURRENT FILING DATE: 2002-03-05
PRIOR APPLICATION NUMBER: 09/764,887
PRIOR APPLICATION NUMBER: 60/179,065
PRIOR APPLICATION NUMBER: 60/179,065
PRIOR APPLICATION NUMBER: 60/180,628
PRIOR APPLICATION NUMBER: 60/214,886
PRIOR APPLICATION NUMBER: 60/214,886
PRIOR APPLICATION NUMBER: 60/214,886
 Prior application data removed - consult PALM or file wrapper NUMBER OF SEQ ID NOS: 658
SOFTWARE: PatentIn Ver. 2.0
SEQ ID NO 163
LENGTH: 58
 Sequence 163, Applic Publication No. US20 GENERAL INFORMATION:
 GENERAL INFORMATION:
APPLICANT: Rosen et
 Sequence 163, App
Patent No. US2002
 Matches
 Query Match
 APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids, Proteir
FILE REFERENCE: PA113
CURRENT APPLICATION NUMBER: US/09/764,887
CURRENT FILING DATE: 2001-01-17
 PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 60/217,487
PRIOR FILING DATE: 2000-07-11
 FILE REFERENCE: PA113C1
 APPLICANT: Rosen et al.
TITLE OF INVENTION: Nucleic Acids, Proteins, and Antibodies
 NAME/KEY: SITE
LOCATION: (51)
OTHER INFORMATION: Xaa equals any
 OTHER INFORMATION: Xaa equals any of the naturally occurring
 NAME/KEY: SITE LOCATION: (48)
 TYPE: PRT
ORGANISM: Homo sapiens
 OTHER INFORMATION: Xaa equals stop translation
 NAME/KEY: SITE
LOCATION: (427)
 TYPE: PRT
ORGANISM: Homo sapiens
 FEATURE:
 FEATURE:
 Local Similarity
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 1 AIDHLSILEAWSGNDN 16
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 AAGSLSYLEGWSGEDH 40
 Application US/10073961
 Application US/09764887
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 US20030077602A1
 0042096A1
 Nucleic Acids, Proteins, and
 42.9%;
52.6%;
 39.8%;
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 Score 45;
Pred. No.
 Score 48.5;
Pred. No. 2
 Mismatches
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11;
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 Antibodies
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R FILING DATE: 2000-08-14
R APPLICATION NUMBER: 60/220,963
R FILING DATE: 2000-07-26
OR APPLICATION NUMBER: 60/217,496
R FILING DATE: 2000-07-11
R APPLICATION NUMBER: 60/225,447
R FILING DATE: 2000-08-14

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: 2000-08-22 NUMBER: 60/216,647 : 2000-07-07 NUMBER: 60/225,267

APPLICATION NUMBER: 60/218,290
FILING DATE: 2000-07-14
APPLICATION NUMBER: 60/225,757
FILING DATE: 2000-08-14
APPLICATION NUMBER: 60/226,868

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OR FILLING DATE: 2000-08-14
OR APPLICATION NUMBER: 60/225,270
OR APPLICATION NUMBER: 60/251,869
OR APPLICATION NUMBER: 60/251,869
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OR FILING DATE: 2000-08-14
OR FILING DATE: 2000-09-27
OR APPLICATION NUMBER: 60/234,274
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OR APPLICATION NUMBER: 60/234,274
OR APPLICATION NUMBER: 60/234,518
OR FILING DATE: 2000-09-21
OR APPLICATION NUMBER: 60/224,518
OR FILING DATE: 2000-08-14
OR APPLICATION NUMBER: 60/224,518
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OR APPLICATION NUMBER: 60/244,519
OR APPLICATION NUMBER: 60/244,519
OR APPLICATION NUMBER: 60/244,519
OR APPLICATION NUMBER: 60/244,617
OR APPLICATION NUMBER: 60/25,268
OR FILING DATE: 2000-09-29
OR APPLICATION NUMBER: 60/25,268
OR FILING DATE: 2000-09-29
OR APPLICATION NUMBER: 60/25,268
OR APPLICATION NUMBER: 60/25,363
OR APPLICATION NUMBER: 60/25,363
OR APPLICATION NUMBER: 60/25,343
OR APPLICATION NUMBER: 60/25,343
OR APPLICATION NUMBER: 60/29,343
OR APPLICATION NU

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RESULT 10
US-10-011-366-10
 밁
 δ
 Sequence 10, Application US/10011366 Publication No. US20030054493A1 GENERAL INFORMATION:
 Query Match
Best Local
 Matches
 COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Version

CURRENT APPLICATION DATA:

APPLICATION UNMBER: US/10/011,366

FILING DATE: 16-NO. US20030054493A1-2001

CLASSIFICATION: <Unknown>
 FILING DATE: 2000-09-08
APPLICATION NUMBER: 60/233,064
FILING DATE: 2000-09-14
 FILING DATE:
 FILING DATE: 2000-09-14
APPLICATION NUMBER: 60/232,401
 APPLICATION NUMBER: 60/232,081 FILING DATE: 2000-09-08
 CORRESPONDENCE ADDRESS:
ADDRESSEE: Medlen & Carroll
STREET: 220 Montgomery Street,
 APPLICATION NUMBER: 60/231,243
 APPLICATION NUMBER: 60/241,221
 FILING DATE:
 APPLICATION NUMBER: 60/241,826
 APPLICATION NUMBER: 60/241,808 FILING DATE: 2000-10-20
 FILING DATE:
 APPLICATION NUMBER: 60/232,399
 APPLICATION NUMBER: 60/232,397 FILING DATE: 2000-09-14
 FILING DATE:
 APPLICATION NUMBER: 60/233,063
 APPLICATION NUMBER: 60/231,244
 APPLICATION NUMBER: 60/231,414 FILING DATE: 2000-09-08
 FILING DATE:
 APPLICATION NUMBER: 60/232,080
 FILING DATE: 2000-09-08
 APPLICATION NUMBER:
 APPLICATION NUMBER: 60/232,400
 APPLICATION NUMBER: 60/246,475
 FILING DATE:
 APPLICATION NUMBER: 60/241,786
 NUMBER OF SEQUENCES:
 TITLE OF INVENTION: IDENTIFICATION OF NEUTRALIZING EPITOPES
OF TOXIN A AND TOXIN B FOR THE TREATMENT OF C.
 APPLICANT: Williams, James A.
 25
 Similarity
 AAGSLSYLEGWSGEDH 40
 AIDHLSILEAWSGNDN 16
 CITY: San Francisco
STATE: California
 COUNTRY:
 APPLICATION DATA:
 Conservative
 2000-09-08
 2000-10-20
 2000-10-20
 2000-09-08
 2000-11-17
 2000-11-08
 2000-10-20
 2000-09-14
 2000-09-14
 2000-09-14
 United States of America
 56.2%;
 John
 60/231,242
 DISEASE
 Score 45; DB
Pred. No. 11;
 Mismatches
 Suite 2200
 BB
 15;
 6,
 Length 58
 #1.30
 0
 Gaps
 DIFFICILE
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 RESULT 11
US-10-225-810-28
 밁
 US-10-225-810-44
 RESULT 12
 US-10-225-810-28
 US-10-011-366-10
Sequence 44, Application US/10225810
publication No. US20030157512A1
GENERAL INFORMATION:
APPLICANT: Bermingham, Jr., John R.
TITLE OF INVENTION: Trandorins and Methods of Using Trandorin
FILE REFERENCE: McLaugh-07165
CURRENT APPLICATION NUMBER: US/10/225,810
CURRENT FILING DATE: 2002-08-21
NUMBER OF SEQ ID NOS: 76
 TITLE OF INCENTION: Trandorins and Methods of Using FILE REFERENCE: McLaugh-07165
CURRENT APPLICATION NUMBER: US/10/225,810
CURRENT FILING DATE: 2002-08-21
NUMBER OF SEQ ID NOS: 76
SOFTWARE: Patentin version 3.2
SEQ ID NO 28
SEQ ID NO 28
 Sequence 28, Application US/10225810
Publication No. US20030157512A1
GENERAL INFORMATION:
APPLICANT: Bermingham, Jr., John R.
 Query Match
Best Local (
 Best Local Similarity
Matches 8; Conserv
 Matches
 Query Match
 TYPE: PRT
ORGANISM: Homo
 LENGTH:
 INFORMATION FOR SEQ ID NO: 10: SEQUENCE CHARACTERISTICS:
 1733
 MOLECULE TYPE: protein SEQUENCE DESCRIPTION: SEQ ID NO:
 ATTORNEY/AGENT INFORMATION:
 TELECOMMUNICATION INFORMATION:
 73
 207
 2 IDHLSILEAWSGNDNDYV 19
 9 EAWSGNDNDYVKO 21
 Similarity
8; Conserv
 NAME: Ingolia, Diane E. REGISTRATION NUMBER: 40,027 REFERENCE/DOCKET NUMBER: OPI
 ELWSDNFTDFVKQ 85
 INDLSIRYVWSNDGNDFI 1750
 APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
APPLICATION NUMBER: US 07/985,321
 TOPOLOGY: linear
 TYPE: amino acid
 APPLICATION NUMBER: US 0 FILING DATE: 31-OCT-1989
 FILING DATE: 04-DEC-1992
 FILING DATE: 23-OCT-1997
APPLICATION NUMBER: US 08/329,154
 LENGTH: 2366 amino
 FILING DATE: 24-OCT-1994
 APPLICATION NUMBER: US/08/957,310
 TELEPHONE: (415) 705-8410
 Conservative
 Conservative
 sapiens
 (415)
 39.8%;
44.4%;
 38.9%;
 397-8338
 4; Mismatches
 acids
 Score 44;
Pred. No.
 Score 45;
Pred. No.
 Mismatches
 07/429,791
 OPHD-01121
 10:
 6e+02;
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 DB 15;
 12;
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 Length 207;
 Indels
 Indels
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0;

Gaps

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Gaps

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 8
 RESULT 13
US-09-810-808-8
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 Query Match
Best Local Similarity
Watches 8; Conserve
 US-09-810-808-8
 US-10-225-810-44
 Query Match
Best Local S
Matches 8
 Sequence 8, Application US/09810808
Patent No. US20020042114A1
GENERAL INFORMATION:
 SEQ ID NO 44
 SOFTWARE: PatentIn version 3.2
 TYPE: PRT ORGANISM: Mus musculus
 TELEFAX: 415-845-4166 INFORMATION FOR SEQ ID NO: 8: SEQUENCE CHARACTERISTICS:
 ENGTH:
 COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASESEQ Version 1.5
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/810,808
FILING DATE: 15-Max-2001
PRIOR APPLICATION NUMBER: 09/541,228
FILING DATE: CUNKNOWN>
FILING DATE: CUNKNOWN>
 / Match 38.9%;
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les 8; Conservative
 ATTORNEY/AGENT INFORMATION:
NAME: Billings, Lucy J
REGISTRATION NUMBER: 36,749
REFERENCE/DOCKET NUMBER: PF-0118 US
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-855-0555
 IMMEDIATE SOURCE:
LIBRARY: GenBank
 CORRESPONDENCE ADDRESS:
ADDRESSEE: Incyte Pharmaceuticals, Inc.
STREET: 3174 Porter Drive
 TITLE OF INVENTION: NOVEL HUMAN NUMBER OF SEQUENCES: 9
 APPLICANT: Au-Young,
 SEQUENCE DESCRIPTION: SEQ ID NO:
 MOLECULE TYPE: peptide
 247
248 ELWSDNFTDFVKQ 260
 9 EAWSGNDNDYVKQ 21
 EAWSGNDNDYVKQ 21
 ELWSDNFTDFVKQ 259
 STRANDEDNESS: single TOPOLOGY: linear
 CLONE: 1117791
 TYPE: amino acid
 COUNTRY: U.S.
 STATE: CA
 ENGTH: 487 amino acids
 TY: Palo Alto
 Conservative
 Guegler, Karl J.
Hawkins, Phillip R.
 38.9%;
 Janice
 Score 44;
Pred. No.
 Score 44; DB 9; Le
Pred. No. 1.6e+02;
1; Mismatches 4;
 Mismatches
 PROTEIN KINASES
 1.4e+02
 DB
 12;
 Length 487;
 Length 448;
 Indels
 Indels
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 0
 Gaps
 0;
 0;
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 RESULT 15
US-10-291-253A-11
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Search completed: November 13, Job time : 27.4692 secs
 片
 8
 US-09-813-408-28
 RESULT 14
US-09-813-408-28
 US-10-291-253A-11
 SEQ ID NO 11
LENGTH: 272
 Sequence 11, Application US/10291253A Publication No. US20030150017A1 GENERAL INFORMATION:
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Matches
 SOFTWARE: PatentIn version 3.0
SEQ ID NO 28
LENGTH: 554
TYPE: PRT
ORGANISM: Bacillus halodurans
 GENERAL INFORMATION:
APPLICANT: Delagrave, Simon
APPLICANT: Marrs, Barry
 Sequence 28, Application US/09813408 Publication No. US20030049619A1
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 Query Match
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 FILE REFERENCE: nematode
CURRENT APPLICATION NUMBER: US/10/291,253A
CURRENT FILING DATE: 2003-03-31
PRIOR APPLICATION NUMBER: PR8706
PRIOR ETLING DATE: 2001-11-07
PRIOR APPLICATION NUMBER: PR8802
PRIOR FILING DATE: 2001-11-12
PRIOR APPLICATION NUMBER: US60/341404
PRIOR APPLICATION NUMBER: US60/341404
 CURRENT APPLICATION NUMBER: US/09/813,408
CURRENT FILING DATE: 2001-03-21
NUMBER OF SEQ ID NOS: 85
 TITLE OF INVENTION: Methods For The Synthesis Of Polynucleotides And Combinatorial Li
TITLE OF INVENTION: Of Polynucleotides
FILE REFERENCE: HER0041
 APPLICANT: Botella, Jose
APPLICANT: Graham, Michael
APPLICANT: Fairbairn, David
TITLE OF INVENTION: A Method for Facilitating Pathogen Resistance
 NUMBER OF SEQ ID NOS:
 SOFTWARE: PatentIn
 PRIOR FILING DATE: 2001-12-14
 TYPE: PRT ORGANISM: Meloidogyne javanica
 Local Similarity
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 Local
 177 VDDLSIVNKWRNVSKSKFSNEGNDFEKQ 204
 450 AYDHDVVLIAASGNDN 465
 10;
 2 IDHLSILEAW-----SGNDNDYVKQ 21
 1 AIDHLSILEAWSGNDN 16
 Similarity
 Conservative
 Conservative
 version 3.1
 38.1%; Score 43; DB 12; 35.7%; Pred. No. 1.2e+02;
 38.9%; Score 44; DB 11; 62.5%; Pred. No. 1.8e+02;
 2003, 10:29:03
 ω
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 Mismatches
 ed. No. 1.8e+02;
Mismatches 5;
 Length 272;
 Length 554;
 Indels
 8
 0
 Gaps
 Gaps
 0
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Maximum DB
 Total number of hits satisfying chosen parameters:
 Sequence:
 Title:
Perfect score:
 Run on:
 OM protein - protein search, using
 Post-processing:
 Scoring table:
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seq length: 2000000000
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 BLOSUM62
 November 13, 2003, 09:31:40 ; Search time 38.5166 Seconds (without alignments) 86.541 Million cell updates/sec
 1107863 seqs, 158726573 residues
 Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
 Gapop 10.0 ,
 1 ANNHVSIVEAWSDNDTPYLHD
 US-09-290-049A-14
 Copyright
 GenCore version (c) 1993 - 2003
 Gapext 0.5
 sw model
 21
 Compugen Ltd.
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

| Result<br>No. | Score | Query<br>Match | Query<br>Match Length DB | BC | ΩĬ       | Description        |
|---------------|-------|----------------|--------------------------|----|----------|--------------------|
| ب             | 119   | 100.0          | 1592                     | 14 | AAR32925 | Glucosyltransferea |
| N             | 108   | 90.8           | 1017                     | 23 | AAU79285 | Streptococcus muta |
| ω             | 108   | 90.8           | 1475                     | 23 | AAU98027 | S. mutans glucosyl |
| 4             | 108   | 90.8           | 1475                     | 23 | AAU98030 | S. mutans glucosyl |
| υī            | 108   | 90.8           | 1475                     | 23 | AAU98031 | S. mutans glucosyl |
| თ             | 108   | 90.8           | 1475                     | 23 | AAU98032 | S. mutans glucosyl |
| 7             | 108   | 90.8           | 1475                     | 23 | AAU98033 | S. mutans glucosyl |
| 80            | 108   | 90.8           | 1475                     | 23 | AAU98034 | S. mutans glucosyl |
| ø             | 108   | 90.8           | 1475                     | 23 | AAU98035 |                    |
|               | -     |                |                          |    |          |                    |

XTTTXX

N-PSDB; AAQ37760.

|                       |            |        |      |      |        | SULT 1<br>132925 |
|-----------------------|------------|--------|------|------|--------|------------------|
|                       | ALIGNMENTS |        |      |      |        |                  |
| Drosophila melanog    | ABB61809   | 22     | 088  | •    | 46     | 45               |
| i                     | AAB36552   | 22     | 486  | 38.7 | 46     | 44               |
| Amino acid sequenc    | AAU82715   | 23     | 1604 |      | 46.5   | 43               |
| Novel central nerv    | AAU87244   | 22     | 539  | •    |        | 42               |
| LDL receptor bindi    | ABB04873   | 23     | 749  | •    | 47     | 42.<br>F-3       |
| Dextrane-saccharas    | ABB98648   | 23     | 12   |      | 47     | 40               |
| Dextrane-saccharas    | ABB98646   | 23     |      | 39.5 | 47     | 3 0              |
| Dextrane-saccharas    | ABB98644   | 2 0    | 1 1  |      | 4 4    | ں بر<br>ہ        |
| partrapage and second | AAU/4519   | 3 6    | 18/1 | •    | 4 4    | ა <u>ს</u>       |
| Human polypeptide     | AAM43544   | 22     | 401  |      | 48.5   | ω                |
| Drosophila melanog    | ABB59363   | 22     | 1252 | •    | 50     | 34               |
| T.thermophilus nit    | AAW75420   | 20     | 1195 | •    | 51     | ω<br>ω           |
| Dextran saccharase    | ABB98573   | 23     | 855  |      | 52     | 32               |
| Arabidopsis thalia    | AAG09941   | 21     | 195  | •    | 53     | 31               |
| Dextrane-saccharas    | ABB98643   | 23     | 12   |      | 53     | 30               |
| L. mesenteroides a    | AAB10667   | 21     | 2057 | •    | 55     | 29               |
| Alpha-D-glucosyltr    | AAR91047   | 17     | 1577 |      | 57     | 28               |
| Dextrane-saccharas    | ABB98641   | 23     | 12   |      | 60     | 27               |
| Leuconostoc mesent    | AAU80055   | Ω<br>ω | 1527 | •    | თ<br>: | 26               |
| Dextrane-saccharas    | ABB98642   | 23     | 12   |      | 6 i    | ស                |
| extran sa             | ABB98574   | 2      | 2835 |      | 72     | 24               |
| S. mutans glucosyl    | AAU98045   | 23     | 1430 | 62.2 | 74     | 23 1             |
| . mutans              | AAU98043   | s k    | 1430 |      | 7,4    | ) L              |
| . mutans              | AAU98042   | 23     | 1430 | ٠    | 74     | 20               |
| . mutans              | AAU98041   | 23     | 1430 | 62.2 | 74     | 19               |
| . mutans              | AAU98029   | 23     | 1430 | •    | 74     | 18               |
| treptococcus mut      | AAU79288 . | 23     | 1375 | 83.2 | 99     | 17               |
|                       | AAU98028   | 23     | 1375 | •    | 99     | 16               |
| treptococcus mut      | AAU79284   | 23     | 1476 |      | 108    | 15               |
| mutans                | AAU98040   | 23     | 1475 | ٠    | 108    | 14               |
| . mutans              | AAU98039   | 23     | 1475 |      | 108    | 13               |
|                       | AAU98038   | 23     | 1475 |      | 108    | 12               |
| mutans                | 803        | N<br>ω | 1475 | 90.8 | 108    | <u>н</u><br>Н    |
| S. mutans glucosvl    | AAU98036   | 22     | 1475 | 90.8 | 108    | 10               |

| RESUL    | ら<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ<br>ロ |
|----------|--------------------------------------------------------------------|
| AAR32925 | 2925                                                               |
| Ü        | AAR32925 standard; Protein; 1592 AA.                               |
| ×        |                                                                    |
| Ã        | AAR32925;                                                          |
| Ž        |                                                                    |
| TO       | 28-JUN-1993 (first entry)                                          |
| Ž        |                                                                    |
| 띪        | Glucosyltransferease I.                                            |
| Ž        |                                                                    |
| Ş        | GT-1; Streptococcus; dental; caries.                               |
| ×        |                                                                    |
| SO       | Streptococcus sobrinus.                                            |
| Ž        |                                                                    |
| PN       | JP05023188-A.                                                      |
| ×        |                                                                    |
| B        | 02-FEB-1993.                                                       |
| Ž        |                                                                    |
| ΡF       | 25-JUL-1991; 91JP-0186592.                                         |
| ž        |                                                                    |
| PR       | 25-JUL-1991; 91JP-0186592.                                         |
| Ž        |                                                                    |
| PA       | (FUKU/) FUKUI I.                                                   |
| PA       | (KATO/) KATO K.                                                    |
| ×        |                                                                    |
| DR       | WPI; 1993-079449/10.                                               |

SX5555555XS

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AAU79285
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XX AAU7
XX Stre
XX Stre
XX Stre
XX STR
XX JP2(
XX JP2(
XX JP2(
XX JP2(
XX JP2(
XX MPI
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CC an
CC an
CC inh
 RESULT 2
 Query Match
Best Local S
Matches 18
 Query Match
Best Local S
Matches 21
 The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-1756) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosy transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This
 Sequence
 The DNA sequence from Streptococcus sobrinus strain 6715 encodes glucosyltransferase-I (and mutants). The DNA was obtd. by treating S. sobrinus 6715 with mutanolysin, extracting the chromosomal DNA, partially digesting with Sau3AI and fractionating on agarose gel. The 3-5 kbp fragment was ligated into pUC18 and E. coli JM109 transformed with it. A GT-1 expressing clone was isolated and sequenced. The clone may be used in the development of a drug for
 Claim 13; Page 15; 29pp; Japanese
 Sequence
 Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans -
 Streptococcus mutans.
 Streptococcus mutans monoclonal
 dental caries.
 protein
 Claim 4; Page 17-19;
 WPI; 2002-448101/48
 04-OCT-2000; 2000JP-0304889
 04-OCT-2000; 2000JP-0304889
 16-APR-2002
 JP2002114709-A
 anti-caries; glucosyl
 Antibody;
 13-AUG-2002
 AAU79285 standard;
 (UYNI-) UNIV NIPPON
 18;
 1 ANNHVSIVEAWSDNDTPYLHD
1 ANNHVSIVEAWSDNDTPYLHD 21
 21;
 Similarity
 Similarity
 represents a Streptococcus mutans monoclonal antibody-related
 ANNHVSIVEAWSDNDTPYLHD
 dental caries; water insoluble glucan synthetase;
 1592 AA;
 1017 AA;
 Conservative
 Conservative
 (first entry)
 Protein;
 100.0%;
 90.8%;
 28pp; Japanese.
 transferase-B; immunotherapy
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 1017
 ω
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 Score 108; DB 23;
Pred. No. 1.7e-07;
 Score 119; DB 14;
Pred. No. 6.4e-09;
 497
 21
 antibody-related protein
 Mismatches
 Mismatches
 Length 1017;
 Indels
 Length
 Indels
 by treating
 1592;
 an
of glucosyl
 0
 0,
 Gaps
 glucosyl
 0,
 0
```

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RESULT 3
AAU98027
멂
 S. mutans glucosyltransferase GTFB
 AAU98027
 27-AUG-2002
 AAU98027;
 447
 standard;
 ANDHLSILEAWSDNDTPYLHD
 (first entry)
 Protein;
 1475
 467
 A
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07-JUN-1995; 16-JAN-1998; 16-JAN-1998; 20-JAN-1998; Streptococcus mutans. 19-DEC-2000; 14-MAR-2002. amyloplast; vacuole; coating composition; 07-JUN-1995; 07-JUN-1995; 11-DEC-1998; 2000US-0740274. 95US-0485243. 98US-0007999. 98US-0008172. 98US-0009620. 98US-0210361. 95US-0478704. 95US-0482711. GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic paper manufacture. molecule;

Glucosyltransferase;

В Ś

(NICH/) NICHOLS S H

Nichols SE

WPI; 2002-414332/44. N-PSDB; ABK52938.

Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -

Disclosure; Page 21-25; 44pp; English.

The invention an isolated protein comprising a glucosyltransferase (C (GTF) B polypeptide having changes at position from I448V, D457N, D457N, D457N/D571K, L144V, D457N/D57TK, D457N/D57TK t sequence brittle-1

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RESULT 4
AAU98030
ID AAU9
 밁
 Š
 Query Match
Best Local :
 Matches
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 chlorophyll AB binding protein to produce a transgenic plant, and glucatis produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

The present sequence represents GTFB.
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, X1014T, D457N/D57TX, D457N/D57TX, D567T/D571K, D567T/D571K/X1014T, 1448V/D457N/D567T/D571K/K779Q/K1014T,
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 Streptococcus
 amyloplast;
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
 S. mutans glucosyltransferase GTFB mutant I448V.
 27-AUG-2002
 Sequence
 Claim 36;
 paper manufacture, comprises mutations in
 WPI; 2002-414332/44.
 19-DEC-2000; 2000US-0740274.
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 AAU98030 standard;
 (NICH/) NICHOLS
 481
 18;
 -ب
 Similarity
 SE;
 ANNHVSIVEAWSDNDTPYLHD
 ANDHLSILEAWSDNDTPYLHD 501
 Page -; 44pp;
 1475 AA;
 vacuole; paper manufacture; mutant;
 Conservative
 (first entry)
 mutans.
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0482723.
95US-0485243.
98US-0007999.
98US-0008172.
 S E
 448
 98US-0009620
 Location/Qualifiers
 /note= "Wild-type Ile substituted by
 Protein;
 90.8%;
85.7%;
 English.
 1475
 ω
--
 Score 108; DB 23;
Pred. No. 2.7e-07;
3; Mismatches 0;
 21
 specific
 mutein.
 Length 1475;
 Indels
 positions
 0;
 and glucan
 Gaps
 ö
```

```
RESULT 5
AAU98031
 片
 Š
 CC changes at positions from TS89D, T589E, N471D, N471D/T589E. Also included are a glucan produced by the GTF mutant, CC N471D/T589E. Also included are a glucan produced by the GTF mutant, CC an isolated polynucleotide which encodes P1 or P2, or its complementary cc polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell cc introduced with the vector, a transgenic plant comprising the comprising the cvector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed cc with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line cflicient in starch biosynthesis, transformed with a gene encoding a glucan is produced in a plant trype or mutant and a paper comprising the glucan in a plant trype or mutant and a paper comprising the glucan in a plant. The vector is useful comprising the glucan in a plant. The method comprises transforming a conditions to produce a regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and contains a transit nead of the contains and a place in and contains a transit sequence from contains a tr
 Matches
 Query Match
Best Local
 chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention.
 Streptococcus mutans synthetic.
 coating composition;
amyloplast; vacuole;
 S. mutans
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
 27-AUG-2002 (first entry)
 AAU98031 standard; Protein; 1475
 Sequence
 Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
 US2002031826-A1
 Misc-difference
 481 ANDHLSILEAWSDNDTPYLHD 501
 Н
 Similarity
 ANNHVSIVEAWSDNDTPYLHD 21
 glucosyltransferase GTFB
 1475 AA;
 Conservative
 Location/Qualifiers
 /note= "Wild-type Asp
 90.8%;
85.7%;
 paper manufacture; mutant; mutein.
 Score 108; DB 23;
Pred. No. 2.7e-07;
 Mismatches
 mutant
 substituted by Asn"
 D457N
 23;
 0
 Length 1475;
 Indels
 0;
 Gaps
 0
```

19-DEC-2000; 2000US-0740274.

```
C(GTF) B polypeptide having changes at position from 148W, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D57TK, D457N/D57TK, D57TK, K1014T, M457N/D567T, D457N/D57TK, D567T/D57TK, K1014T, M457N/D567T, D57TK, K779Q/K1014T, CC D567T/D57TK/K1014T, And K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and CC CARANGES at positions from T589D, T589E, N471D, N471D/T589D, and CC CARANGES at positions from T589D, T589E, N471D, N471D/T589D, and CC CARANGES at positions from T589D, T589E, N471D, N471D/T589D, and CC CARANGES at positions from T589D, T589E, N471D, N471D/T589D, and CC CARANGES at rabonucleotic acid sequence encoding the GTF mutant, CC an isolated polynucleotide which encodes P1 or P2, or its complementary CC polynucleotide, a rabonucleot acid sequence encoding the GTF mutant, CC an expression cassette comprising the expression cassette, host cell CC introduced with the vector, a transgenic plant comprising the CC coating composition comprising the expression cassette, host cell CC with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where CC with a gene encoding the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a malze line CC comprising the glucan in a plant. The method comprises transforming a CC comprising the plant cell with the vector, growing the plant cell under plant growing cC conditions to produce a regenerated plant and inducing expression of the CC regenerated plant, where the vector contains a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and cCC is produced in the amyloplast or retains or the vacuole of small plant, where the vector contains a transgenic plant, and glucan contains a plant transformed contains and glucan in the contains a plant or the vacuole of the contains and plant and plant and glucan contains a plant and glucan contains a plant and glucan contains a
 Ş
 뮹
 Matches
 Query Match
Best Local
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
 chlorophyll AB binding protein to produce a transgenic plant, and gluca is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU9802 and the information in claim 36.
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
 16-JAN-1998;
16-JAN-1998;
 Claim 36; Page -; 44pp; English.
 Sequence
 invention an isolated protein comprising a glucosyltransferase F) B polypeptide having changes at position from I448V, D457N,
481
 18;
 NICHOLS
 Similarity
 ANDHUSILEAWSDNDTPYLHD 50:
 ANNHVSIVEAWSDNDTPYLHD 21
 1475
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 တ
 B
 90.8%;
 Score 108; DB Pred. No. 2.7e 3; Mismatches
 DB 23;
.7e-07;
 23;
 0
 Length 1475;
 cification but appearing as AAU98027
 0;
 Gaps
 0
```

RESULT 6

```
CC (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D57TK, D567T/D57TK, L1014T, D457N/D57TK, D567T/D57TK, L1014T, I448V/D457N/D57TK, D567T/D57TK, L1014T, I448V/D457N/D57TK, D567T/D57TK, CC D567T/D57TK, L1014T, I448V/D457N/D57TK, D567T/D57TK, L1014T, CC D567T/D57TK, L1014T, I448V/D457N/D567T/D57TK, M77D/T69D, and CC Changes at positions from T589D, T589E, N47DN, N47DT/T89D, and CC QTF D polypeptide having and cc quality compression casesette comprising the polymucleotide operably linked to a promoter, a vector comprising the polymucleotide operably linked to a promoter, a vector comprising the expression casesette, host cell introduced with the vector, a transgenic plant comprising the introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a deficient in starch biosynthesis, transformed with a gene encoding a glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a polymucleotide for a time sufficient to produce the glucan in the polymucleotide for a time sufficient to produce the glucan in the conditions to produce a regenerated plant and inducing expression of the polymucleotide for a time sufficient to produce the glucan in the conditions to produce a regenerated plant waxy, brittle-1 and chlorophyll AB binding protein to produce a transgenic plant, and glucan chlorophyll AB binding protein to produce a transgenic plant, and glucan chlorophyll AB binding protein to produce a transgenic plant, and glucan chlorophyll and call with the vector contains a transit sequence from the conditions to produce the glucan in the conditions to produce the glucan i
 S. mutans glucosyltransferase GTFB mutant D567T
 Glucosyltransferase B or D protein useful for producing a glucan was substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 07-JUN-1995;
 Location/Qualifiers
 Synthetic.
 Streptococcus
 amyroprast;
 coating composition;
 Glucosyltransferase;
 27-AUG-2002
 AAU98032;
 AAU98032 standard; Protein; 1475
 WPI; 2002-414332/44.
 19-DEC-2000; 2000US-0740274
 US2002031826-A1
 Claim
 07-JUN-1995
 11-DEC-1998;
 (NICH/) NICHOLS
 16-JAN-1998
 L6-JAN-1998;
 Page -; 44pp; English.
 vacuole;
 (first entry)
 mutans
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
95US-0485243.
98US-0007999.
98US-0008172.
 98US-0009620
 ശ
 /note= "Wild-type Asp substituted by
 glucan; starch; latex; thermoplast
paper manufacture; mutant; mutein.
 GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
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RESULT 7
AAU98033
ID AAU9
XX AAU9
AC AAU9
AC AAU9
AX S. n
AX Coat
KW C
 Ş
 8888888888888888
 밁
 Query Match
Best Local S
Matches 18
 is produced in the amyloplast of potato or the vacuole of sugar beet. Glicans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
 S. mutans glucosyltransferase GTFB mutant K1014T.
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 Glucosyltransferase;
 Sequence
 WPI; 2002-414332/44.
 19-DEC-2000;
 14-MAR-2002
 Synthetic.
 Streptococcus mutans
 amyloplast;
 27-AUG-2002
 AAU98033;
 AAU98033 standard; Protein; 1475
 16-JAN-1998;
16-JAN-1998;
 07-JUN-1995;
 US2002031826-A1
 Misc-difference
 (NICH/) NICHOLS
 20-JAN-1998;
 481 ANDHLSILEAWSDNDTPYLHD 501
 manufacture,
 1 ANNHVSIVEAWSDNDTPYLHD 21
 18;
 composition;
 Similarity
 1475
 vacuole;
 Conservative
 (first entry)
 2000US-0740274
 95US-0478704.
95US-0482711.
95US-0485243.
95US-007999.
98US-0008172.
98US-0009620.
 98US-0210361.
 AA;
 ഗ
 1014
 Location/Qualifiers
 /note= "Wild-type Lys substituted
 44pp.;
 comprises mutations in
 90.8%;
 GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
 paper manufacture;
 English
 <u>ن</u>
 Score 108; DB Pred. No. 2.7e 3; Mismatches
 mutant; mutein.
 DB 23;
2.7e-07;
les 0;
 specific
 Length 1475;
 δ
 Indels
 positions
 Thr"
 0;
 Gaps
 0
```

The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N,

```
RESULT 8
AAU98034
AID AAU5
XX AAU9
XX AAU5
XX AAU5
XX COA
XX Mamyl
XX Amyl
XX Stre
XX Stre
XX Stre
XX Stre
XX Mise
FT Mise
FT Mise
FT Mise
FT Wise
PN US20
 CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, K1014T, CC D567T/D571K/K1014T, I448V/D457N/D57TK/K779Q/K1014T, CC Y169A/Y170A/Y17A, and K779Q or a GTF D polypeptide having CC changes at positions from T589D, T589Z, N471D, M471D/T589D, and M471D/T589E. Also included are a glucan produced by the GTF mutant, CC an isolated polynucleotide which encodes Pl or P2, or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the CC vector, a seed or tuber from the transgenic plant comprising the vector, search, a latex, thermoplastic molecule or their combinations or glucan and starch where CC which a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where CC the glucan is produced in the amyloplast and/or vacuole or a maize line CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC polynucleotide for a time sufficient coptoduce the glucan in the CC polynucleotide for a time sufficient coptoduce the glucan in the CC regenerated plant, where the vector contains a transiforming a conduced in the amyloplast of porduce the glucan in the CC is produced in the amyloplast of potato or the vacuole of sugar beet. CC dlucans are useful as substitute. Unlike prior art techniques, which cc require input materials that produce down the vacuole of sugar beet. CC manufacture utilising the glucan produced by GTF, which utilises biologically produced imput materials, is more cost-effective and cost in the paper during coating step.

CC The present sequence is not shown in the specification but was created by the indexer using the GTFB mutant of the invention.
 멼
 Ś
 Matches
 Query Match
Best Local
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 Sequence
 Streptococcus mutans.
Synthetic.
 S. mutans glucosyltransferase GTFB mutant D457N/D567T
 27-AUG-2002
 AAU98034;
 AAU98034 standard;
 US2002031826-A1
 Misc-difference
 Misc-difference
 the information in claim 36.
 481
 1 ANNHVSIVEAWSDNDTPYLHD 21
 18;
 Similarity
 ANDHLSILEAWSDNDTPYLHD 501
 1475 AA;
 Conservative
 (first entry)
 /note= "Wild-type Asp
567
 Location/Qualifiers
 /note= "Wild-type Asp substituted by Thr"
 Protein; 1475 AA
 90.8%;
 u
••
 Score 108;
Pred. No. 2.
 Mismatches
 substituted
 DB 23;
2.7e-07;
les 0;
 Length 1475;
 by Asn'
 Indels
 0
 Gaps
 0,
```

14-MAR-2002

뮍

481 ANDHLSILEAWSDNDTPYLHD 501

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ce vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed conting composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed there is manufacture or the glucan and starch where comprising the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan in a plant. The method comprises transforming a complications to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant and inducing expression of the collusors biphosphate carboxylase small subunit, waxy, brittle-1 and conformed in the amyloplast of potato or the vacuole of sugar bett. Conformed in the amyloplast of potato or the vacuole of sugar bett. Conformed in the amyloplast of potato or the vacuole of sugar bett. Conformentally produced input materials that produce defilients, which utilises biologically produced input materials, is more cost-effective and conformentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

The present sequence is not shown in the specification but comprises and the information in claim 36.
Query Match
Best Local S
Matches 18
 16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D/T589D, and N471D/T589B. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567F, K1014T, D457N/D57TK, D567F/D571K, D567F/D571K, T1448V/D457N/D567F/D57TK/K1014T,
 Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i
 Nichols SE;
 07-JUN-1995;
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000;
 07-JUN-1995;
 (NICH/) NICHOLS
 Sequence
 Page -; 44pp; English.
 1475
 2000US-0740274
 95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
98US-0009620.
 98US-0210361
95US-0478704
 SE
 8
 comprises
 -0478704
 90.8%;
 mutations in
 Score 108;
Pred. No. 2
 DB 23;
.7e-07;
 specific
 Length 1475;
 positions
 useful
```

Ş

ANNHVSIVEAWSDNDTPYLHD

l Similarity 85. 18; Conservative

ω --

Mismatches

0

Gaps

0;

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RESULT 9
AAU98035
AAU98035
AC AAU9
XXX AAU9
DT 27-P
XXX Gluc
XXX Gluc
XXX Gluc
XXX Gluc
XXX Gluc
XXX 19-1
PF Misc
PF 11-1
PF 11-1
PF 11-1
PF 11-1
PF 11-1
PF 20---
PF
The invention an isolated protein comprising a glucosyltransferase (C (GTF) B polypeptide having changes at position from 1448V, D457N,D571K, D567T,D571K,M1014T, 1448V/D457N,D571K,D57TK,D57TK,M1014T, 1448V/D457N,D57TK,D57TK,D57TK,M1014T, 1448V/D457N,D57TK,D57TK,M1014T,C P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having C changes at positions from T589D, T589B, N471D,M59BD, and C C N471D/T589B. Also included are a glucan produced by the GTF mutant, C polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, C polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, C polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, C promoter, a vector comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell C promoter, a vector comprising the expression cassette, host cell C promoter, a vector comprising the expression cassette, host cell C coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a later, c the glucan special comprising the amyloplast and/or vacuole or a maize line C deficient in starch biosynthesis, transformed with a gene encoding a C comprising the glucan (paper sizing/coating agent). The vector is useful comprising a glucan in a plant: The method comprises transforming a
 07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase GTFB mutant D457N/D571K
 AAU98035 standard; Protein; 1475
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 AAU98035
 11-DEC-1998;
07-JUN-1995;
 Misc-difference
 Synthetic
 Streptococcus mutans
 27-AUG-2002
 Claim
 WPI; 2002-414332/44.
 19-DEC-2000;
 US2002031826-A1
 Misc-difference
 (NICH/)
 36; Page -; 44pp; English.
 NICHOLS
 (first entry
 2000US-0740274
 95US-0485243.
98US-0007999.
98US-0008172.
 98US-0210361.
95US-0478704.
95US-0482711.
 98US-0009620
 571
 Location/Qualifiers
 /note= "Wild-type Asp substituted by Lys"
 'note=
 "Wild-type
 A
 Asp
 substituted
 by Asn"
```

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밁
 Š
 RESULT 10
 regenerated plant, where the vector contains a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce a transgenic plant, and glucan cis produced in the amyloplast of potato or the vacuole of sugar beet. CC and latexes in paper manufacture. Unlike prior art techniques, which crequire input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilizes biologically produced input materials, is more cost-effective and convironmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

CC properties and impart gloss to the paper during coating step.

CC The present sequence represents a GTFB mutant of the invention.

CC Mote: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
 Matches
 Query Match
 plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of polymucleotide for a time sufficient to produce the glucan in the
 WPI; 2002-414332/44
 Nichols
 07-JUN-1995;
07-JUN-1995;
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000;
 14-MAR-2002
 Misc-difference
 Misc-difference
 Synthetic.
 Streptococcus mutans
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase GTFB mutant D567T/D571K
 27-AUG-2002
 AAU98036;
 AAU98036 standard; Protein; 1475 AA
 Sequence
 16-JAN-1998;
16-JAN-1998;
 US2002031826-A1
 (NICH/)
 Local
 18;
 1 ANNHVSIVEAWSDNDTPYLHD 21
 NICHOLS
 Similarity
 ANDHLSILEAWSDNDTPYLHD 501
 1475
 Conservative
 (first entry)
 2000US-0740274
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0482743.
95US-0485243.
98US-0008172.
 Location/Qualifiers 567
 ß
 571
 AA;
 /note= "Wild-type Asp
 note= "Wild-type Asp substituted by Thr"
 -0009620
 90.8%;
 Score 108; DB 23;
Pred. No. 2.7e-07;
3; Mismatches 0;
 substituted by Lys"
 0
 Length 1475;
 Indels
 0;
 growing of the
 Gaps
 0
```

```
CC MATUD/TRSDER. Also included are a glucan produced by the GTF mutant, CC MATUD/TRSDER. Also included are a glucan produced by the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell controduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed cowith a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where CC the glucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a CC comprising the glucan (paper sizing/coating agent). The vector is useful CC comprising the glucan in a plant. The method comprises transforming a CC conditions to produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the vector contains a transit sequence from CC ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and CC chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar best. CC Glucans are useful as substitutes for and additions to modified starch can produce in the finally moreover. Unlike prior art techniques, which capture input materials that produce or the vacuole of sugar best. CC properties and impart gloss to the paper during coating step.

CC The present sequence represents a GTFB mutant of the invention. But the information in claim 36.
 (GTF) B polypeptide having changes at position from 1448V, D567T, K1014T, D457N/D567T, D457N/D57TK, D567T/D57TK, K1014T, 1448V/D457N/D567T/D57TK/K1014T, 1448V/D457N/D567T/D57TK/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, N471D, N471D, N471D/T589D, N471D, Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
 Sequence
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N,
 Claim 36; Page -; 44pp; English.
1475 AA;
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밁
 Ş
AAU98037 standard; Protein; 1475
 1 ANNHVSIVEAWSDNDTPYLHD 21
 ANDHISILEAWSDNDTPYLHD 501
```

Matches Query Match

Local

Similarity

90.8%;

Conservative

ω •-

Score 108; DB 23; Pred. No. 2.7e-07; 3; Mismatches 0;

Length 1475;

0

Gaps

```
RESULT 11
AAU98037
ID AAU98037
XX AAU98
XX AAU98
XX 27-AU
DT 27-AU
XX Glucc
XW COati
KW Coati
KW amylo
OS Synth
 Streptococcus mutans Synthetic.
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
 27-AUG-2002
 coating composition;
amyloplast; vacuole;
 S. mutans glucosyltransferase GTFB mutant D567T/D571K/K1014T
 (first entry)
 glucan; starch; latex; the
paper manufacture; mutant;
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0;

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CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D57TK, D567T/D57TK, D147T, D457N/D567T, D457N/D567T, D57TK/D57TK, K1014T, L448V/D457N/D567T/D57TK/T79Q/K1014T, CC D567T/D57TK/T79Q/K1014T, L448V/D457N/D567T/D57TK/T79Q/K1014T, CC D567T/D57TK/T79Q/K1014T, CC D567T/D57TK/T79Q/K1014T, CC D567T/D57TK/T79Q/K1014T, CC D567T/D57TK/T79Q/K1014T, CC D567T/D57TK/T79Q/K1014T, CC D56TT/D57TK/T79Q/K1014T, CC D56TT/D57TK/T9Q/K1014T, CC D56TT/D57TK/T9Q/K1014T, CC
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
 16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027
 Misc-difference
 Key
Misc-difference
 19-DEC-2000; 2000US-0740274
 US2002031826-A1
 Glucosyltransferase B
 Claim 36; Page -; 44pp; English
 07-JUN-
 (NICH/)
 ucosyltransferase B or D protein useful for producing a glucan substitutes for and additions to modified starch and latexes i per manufacture, comprises mutations in specific positions -
 2002-414332/44
 -1995;
 NICHOLS
 95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 98US-0210361
 /note= "Wild-type Asp
1014
 /note=
571
 Location/Qualifiers 567
 Ø
 /note= "Wild-type Lys substituted by
 "Wild-type
 Asp
 substituted
 substituted
 by Lys"
 λq
 Thr"
 Thr"
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 8 X G
 RESULT 12
 Matches
 Query Match
 07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
 and
 Misc-difference
 Misc-difference
 Misc-difference
 Synthetic
 Streptococcus mutans
 S. mutans GTFB mutant I448V/D457N/D567T/D571K/K779Q/K1014T
 27-AUG-2002
 AAU98038;
 AAU98038 standard; Protein; 1475
 Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 Misc-difference
 Misc-difference
 Misc-difference
 WPI; 2002-414332/44
 (NICH/) NICHOLS
 the information
 481
 1 ANNHVSIVEAWSDNDTPYLHD 21
 18;
 Similarity
 ANDHLSILEAWSDNDTPYLHD 501
 Conservative
 (first entry
 2000US-0740274.
 95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
98US-0009620.
 /note=
: 457
 98US-0210361.
95US-0478704.
 Location/Qualifiers
 S
H
 /note=
779
 571
 567
 1014
 /note= "Wild-type
 /note=
 'note=
 note=
 in claim
 90.8%;
 "Wild-type Asp
 "Wild-type Ile
 "Wild-type
 "Wild-type
 "Wild-type
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 Score 108; DB 23; Pred. No. 2.7e-07; 3; Mismatches 0
 36
 Lуs
 Ľуs
 Asp
 Asp
 substituted by Gln"
 substituted
 substituted
 substituted
 substituted
 0
 Length 1475;
 γď
 γď
 λq
 Уď
 by Val"
 Indels
 Thr"
 Гув"
 Thr"
 molecule;
 0;
 'n
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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,

Claim

36; Page -; 44pp; English

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AAU98039
ID AAUS
XX
AC AAUS
AC AAUS
AC S. n
DE S. n
XX
Glu
 CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, CC thermoplastic molecule or their combinations or glucan and starch where CC the glucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a CC glucosyltransferase B or D enzyme, wild-type or mutant and a paper CC comprising the glucan (paper sizing/coating agent). The vector is useful CC for producing a glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant cell under plant growing CC conditions to produce a regenerated plant and inducing expression of the CC polynucleotide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transit sequence from CC conditions biphosphate carboxylase small subunit, waxy, brittle-1 and CC cinlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch CC and latexes in paper manufacture. Unlike prior art techniques, which crequire input materials that produce chemical effluents, paper CC biologically produced input materials, is more cost-effective and CC commentally friendly. Moreover, glucans also exhibit thermoplastic CC properties and impart gloss to the paper during coating step.

CC The present sequence represents a GTFB mutant of the invention.

CC Mote: The present sequence is not shown in the specification but composition in claim 36.
 Query Match
Best Local S
 Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589D, N471D, N471D/T589D, and N471D/T589D. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 US2002031826-A1
 Misc-difference
 Synthetic
 Streptococcus mutans

 mutans glucosyltransferase

 27-AUG-2002
 AAU98039 standard; Protein; 1475 AA
 Sequence
 D567T/D571K/K1014T, 1448V/D457N/D567T/D571K/K779Q/K1014T,
X169A/Y170A/Y171A, and K779Q or a GTF D polypeptide havi
 481
 1 ANNHVSIVEAWSDNDTPYLHD 21
 Similarity
 ANDHLSILEAWSDNDTPYLHD 501
 1475 AA;
 Conservative
 (first entry)
 Location/Qualifiers 169..171
 /note= "Wild-type Tyr-Tyr-Tyr substituted
Ala-Ala-Ala"
 90.8%; Score 108; DB 23;
85.7%; Pred. No. 2.7e-07;
 GTFB mutant YYY169-171AAA.
 Mismatches
 23;
 0,
 Length 1475;
 γď
 0;
 Gaps
 0
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맑 Š

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The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 148V, D457N, CC D567T, N571K, M57T, D57TK, S77T/D57TK, CC D567T, M57TK, M57TV, D57TK, CC D567T, D57TK, K1014T, A457ND457N, D567T/D57TK, CT M77D67TK, M104T, M57D67TM, And K779Q or a GTF D polypeptide having C changes at positions from T589D, T589E, N471D/T589D, and C M47D/T589E. Also included are a glucan produced by the GTF mutant, C an isolated positions from T589D, T589E, N471D, N471D/T589D, and C M47D/T589E. Also included are a glucan produced by the GTF mutant, C an isolated polymucleotide which encodes P1 or P2, or its complementary C polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, C promoter, a vector comprising the expression cassette, host cell C introduced with the vector, a transgenic plant comprising the vector, a seed or tuber from the transgenic plant, a paper sixing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucan in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sixing/coating agent). The vector is useful comprising the glucan in a plant. The method comprises transforming a glucosyltransferace B or Denzyme, wild-type or mutant and a paper comprising the glucan (paper sixing/coating agent). The vector is useful conditions to produce a regenerated plant and inducing expression of the plant cell winder plant growing the plant toell winder plant growing a plant cell winder plant growing a plant transgenic plant, wary brittle-1 and comprises transforming a plant cell winder plant growing the plant stransit sequence from the plant growing expression of the conditions to produced in the amyloplast of potato or the vacuole of sugar beet. C discount produced by GTF, which utilises biologically produ
 Š
 Matches
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
07-JUN-1998;
16-JAN-1998;
20-JAN-1998;
 Sequence
 Glucosyltransferase B or D protein useful for producing a gluas substitutes for and additions to modified starch and lates paper manufacture, comprises mutations in specific positions
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44.
 19-DEC-2000;
 (NICH/) NICHOLS
 Similarity
ANNHVSIVEAWSDNDTPYLHD
 1475
 2000US-0740274
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
 98US-0009620
 A
 S
 90.8%;
 3
 Score 108; DB 23;
Pred. No. 2.7e-07;
 21
 Mismatches
 Length 1475;
 Indels
 a glucan useful
latexes in
 <u>,</u>
 Gaps
```

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RESULT 14
AAU98040
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, CC D5677, K10147, D457N/D567T, D457N/D571K, D5677/D571K, CC D5677/D571K, K10147, I448V/D457N/D571K, D5677/D571K, CC D5677/D571K, K10147, I448V/D457N/D567T/D571K, M71D7D47K, CC D5677/D571K, K10147, I448V/D457N/D567T/D571K, K779Q/K1014T, CC D5677/D571K, K10147, I448V/D457N/D567T/D571K, K779Q/K1014T, CC P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, N71D, N471D/T589D, and CC P169A/Y170A/Y171A, and K779Q or a GTF D polypeptide between the GTF mutant, CC an expression cassette comprising the polymucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell controduced with the vector, a transgenic plant comprising the introduced with the vector, a transgenic plant comprising the coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, cthermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the rector sufficient to produce the glucan in the regenerated plant, where the vector contains a transit sequence from
 07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
 Streptococcus mutans
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic
 S. mutans glucosyltransferase GTFB mutant K779Q
 AAU98040
 AAU98040 standard;
 Misc-difference
 Synthetic
 27-AUG-2002
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 14-MAR-2002
 US2002031826-A1
 19-DEC-2000;
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44
 (NICH/)
 NICHOLS
 (first
 2000US-0740274
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 ß
 Location/Qualifiers
 note= "Wild-type Lys substituted by Gln"
 Protein;
 entry)
 glucan;
 manufacture; mutant;
 1475
 ₽
 molecule;
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RESULT 15
AAU79284
밁
 Ş
 Matches
 Query Match
Best Local (
 require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in climm is
 chlorophyll AB binding protein to produce a transgenic plant, and gluce is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which
 The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM p-1756) or mouse-hybridoma MHP136 (FERM p-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyl transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This sequence represents a Streptococcus mutans monoclonal antibody-related
 Streptococcus mutans monoclonal antibody-related protein #1
 ribulose biphosphate carboxylase small subunit, waxy, chlorophyll AB binding protein to produce a transgeni
 Streptococcus
 AAU79284;
 AAU79284 standard; Protein; 1476
 Sequence
 Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
 16-APR-2002
 JP2002114709-A.
 anti-caries;
 Antibody; dental caries; water insoluble glucan synthetase;
 13-AUG-2002
 and the information in claim 36.
 04-OCT-2000; 2000JP-0304889
 04-OCT-2000; 2000JP-0304889.
 Claim 3; Page 13-16; 28pp; Japanese
 WPI; 2002-448101/48
 protein
 (UYNI-) UNIV NIPPON
 481 ANDHISILEAWSDNDTPYLHD 501
 18;
 μ
 Similarity
 ANNHVSIVEAWSDNDTPYLHD 21
 1475 AA;
 Conservative
 glucosyl transferase-B; immunotherapy.
 (first entry)
 mutans.
 90.8%;
 3; Mismatches
 Score 108; DB 23;
Pred. No. 2.7e-07;
 0;
 Length 1475;
 brittle-1 and
c plant, and glucan
 an
of glucosyl
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 Gaps
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Query Match

Sequence

1476

A

90.8%;

Score 108;

B 23;

Length 1476;

| Qy 1 ANNHVSIVEAWSDNDTPYLHD 21 | Hest Local Similarity 85.7%; Pred. No. 2.7e-07; Matches 18; Conservative 3; Mismatches 0 |
|-------------------------------|------------------------------------------------------------------------------------------|
|                               | (U                                                                                       |
|                               |                                                                                          |
|                               | -07;<br>0; Indels                                                                        |
|                               | 0;                                                                                       |
|                               | 0; Gaps                                                                                  |
|                               | 0,                                                                                       |
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 Database
 Minimum
 Total number of hits satisfying chosen parameters:
 Searched:
 Run on:
 OM protein -
 Post-processing:
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 Sequence:
Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
 DB
Bd
 Score
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 protein search, using
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 Match
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Listing first 45 summaries
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62.2
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glucosyltransferas
 metalloproteinase
X-Pro dipeptidyl-p
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pyruvate, phosphat
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 probable dextransu
 Description
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 hypothetical
 RhoGEF domain cont
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|                |             | <b></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>ששששש</b>                                                                                                                                                                                                                                                                                                                     | <u> </u>                                                                                                               | א א שט                                                                                                            |            |                                                                                      |                                                                |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Matches        | Query Match | F;1693-1112/Domain: cpl repeat homology <cpl> F;1932-1241/Domain: cpl repeat homology <cpl> F;1222-1241/Domain: cpl repeat homology <cpl> F;1237-1366/Domain: cpl repeat homology <cpl> F;1230-1151/Domain: cpl repeat homology <cpl> F;1330-1371/Domain: cpl repeat homology <cpl> F;1462-1371/Domain: cpl repeat homology <cpl> F;1465-1484/Domain: cpl repeat homology <cpl> F;1465-1484/Domain: cpl repeat homology <cpl> F;1465-1464/Domain: cpl repeat homology <cpl></cpl></cpl></cpl></cpl></cpl></cpl></cpl></cpl></cpl></cpl>                                                                                                                                                                                                                    | A;Title: Peptide sequenc<br>A;Reference number: A381<br>A;Accession: A38175<br>A;Status: preliminary<br>A;Otatus: preliminary<br>A;Molecule type: DNA<br>A;Residues: 1-1592 <abo><br/>A;Cross-references: GB:D</abo>                                                                                                             | C;Date: 28-Aug-1992 #sequence_re: C;Accession: A38175 R;Abo, H.; Mtsumura, T.; Kodama, J. Bacteriol 173, 989-996, 1991 | RESULT 1<br>A38175<br>glucosylt<br>C;Species                                                                      |            | 444<br>544<br>5                                                                      | 440<br>410                                                     |                                                                                                            | 3 3 3 3 0 C C C C C C C C C C C C C C C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| les 21; Conser | latch       | 1093-1112/Domain: 1022-1241/Domain: 1287-1351/G/Domain: 1387-1351/G/Domain: 1390-1351/Domain: 1352-1371/Domain: 1402-140/Domain: 1465-1484/D/Domain: 1513-1532/Domain:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Peptide loe numb lon: A38: prelim: prelim: e type: e type: eference                                                                                                                                                                                                                                                              | 8-Aug-19<br>on: A38;<br>Mtsum<br>iol. 17;                                                                              | ransfer:                                                                                                          |            | 43<br>43<br>43                                                                       | 4 4 4 4<br>3 8 8 8                                             |                                                                                                            | 43<br>444<br>55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Conservative   | l arity     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | sequencer: A381<br>er: A381<br>l75<br>lnary<br>DNA<br>DNA<br>2 <abo></abo>                                                                                                                                                                                                                                                       | 992 #seq<br>175<br>1ra, T.;<br>3, 989-9                                                                                | se prec                                                                                                           |            |                                                                                      |                                                                | - 1 - 1 - 2 - 2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3                                                            | nooo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ative          | 100.0%;     | repeat<br>repeat<br>repeat<br>repeat<br>repeat<br>repeat<br>repeat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | es for<br>75; MU<br>90213;                                                                                                                                                                                                                                                                                                       | wence_<br>Kodam<br>96, 19                                                                                              | ursor<br>sobri                                                                                                    |            |                                                                                      |                                                                | 491<br>491<br>194                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                | 20          | סמת                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NI D:                                                                                                                                                                                                                                                                                                                            | rev<br>la,                                                                                                             | s - S                                                                                                             |            |                                                                                      |                                                                |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ``;            | Score       | homology homology homology homology homology homology homology homology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | crose 8<br>9112322<br>D:g2170                                                                                                                                                                                                                                                                                                    | ision 2<br>T.; Oht                                                                                                     | treptoc                                                                                                           | ALIG       | E70715<br>D89991<br>T35024<br>T36737                                                 | S55978<br>JC7148<br>DEUTGC                                     | F85797<br>AB0742<br>S76593<br>H72037                                                                       | T16217<br>T29027<br>D64947                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Mismatches     | 119; DB     | <cp1><cp1><cp2><cp2><cp3><cp4><cp4><cp4><cp4><cp4><cp4><cp4><cp4< td=""><td>A;Title: Peptide sequences for sucrose splitting and glucan binding within A;Reference number: A38175; MUID:91123227; PMID:1704006 A;Accession: A38175 A;Accession: A38175 A;Status: preliminary A;Molecule type: DNA A;Residues: 1-1592 <abo> A;Crosss-references: GB:D90213; NID:9217032; PIDN:BAA14241.1; PID:d1014946;</abo></td><td>ision 28-Aug-1992 #text_change T.; Ohta, H.; Fukui, K.; Kato,</td><td>RESULT 1<br/>A38175<br/>glucosyltransferase precursor - Streptococcus sobrinus<br/>C;Species: Streptococcus sobrinus</td><td>ALIGNMENTS</td><td></td><td></td><td></td><td></td></cp4<></cp4></cp4></cp4></cp4></cp4></cp4></cp4></cp3></cp2></cp2></cp1></cp1> | A;Title: Peptide sequences for sucrose splitting and glucan binding within A;Reference number: A38175; MUID:91123227; PMID:1704006 A;Accession: A38175 A;Accession: A38175 A;Status: preliminary A;Molecule type: DNA A;Residues: 1-1592 <abo> A;Crosss-references: GB:D90213; NID:9217032; PIDN:BAA14241.1; PID:d1014946;</abo> | ision 28-Aug-1992 #text_change T.; Ohta, H.; Fukui, K.; Kato,                                                          | RESULT 1<br>A38175<br>glucosyltransferase precursor - Streptococcus sobrinus<br>C;Species: Streptococcus sobrinus | ALIGNMENTS |                                                                                      |                                                                |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                | 2; Length   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ting and glucan   MID:1704006                                                                                                                                                                                                                                                                                                    | <pre>#text_change ui, K.; Kato,</pre>                                                                                  | inus                                                                                                              |            |                                                                                      |                                                                |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Indels         | th 1592     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | n binding with                                                                                                                                                                                                                                                                                                                   |                                                                                                                        |                                                                                                                   |            | hypothetical hypothetical probable glut probable homo                                | hypothetical prote<br>heat-shock sigma f<br>glyceraldehyde-3-p | glucos<br>glucos<br>glucos<br>hypoth<br>conser                                                             | hypothetical<br>hypothetical<br>glucose-6-ph                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ,0             |             | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ng v                                                                                                                                                                                                                                                                                                                             | 15-00<br>K.; I                                                                                                         |                                                                                                                   |            | letic                                                                                | iboc)                                                          | 4 6 F C C C C C C C C C C C C C C C C C C                                                                  | 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Gaps           |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                  | 15-Oct-1999<br>K.; Kagawa,                                                                                             |                                                                                                                   |            | hypothetical prote<br>hypothetical prote<br>probable glutathio<br>probable homogenti | cal prok sigma                                                 | glucose-6-phosphat<br>glucose-6-phosphat<br>glucose-6-phosphat<br>hypothetical prote<br>conserved hypothet | hypothetical prote<br>hypothetical prote<br>glucose-6-phosphat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 0;             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Streptococcus PID:g217033                                                                                                                                                                                                                                                                                                        | н.                                                                                                                     |                                                                                                                   |            | ote<br>ote<br>lio<br>lti                                                             | ים<br>היה שיני                                                 | TO CO                                                                                                      | THE PERSON AND THE PE |

Best local Similarity 100.0%; Pred. No. 5.6e-10;
Matches 21; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Matches 21; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ANNHYSIVEAWSDNDTPYLHD 21

Db 477 ANNHYSIVEAWSDNDTPYLHD 497

RESULT 2

B33135

9ftB protein precursor - Streptococcus mutans
C;Species: Streptococcus mutans
C;Species: Streptococcus mutans
C;Accession: B33135, A33128
C;Aate: 23-Oct-1990 #sequence revision 23-Oct-1990 #text\_change 15-Oct-1990
C;Accession: B33135, A33128
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the 9ftB gene from Streptococcus mutans.
A;Accession: B33135
A;Accession: B33135
A;Accession: B33135
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1475 <a href="https://doi.org/10.1001/j.nlp.19153640">https://doi.org/10.1001/j.nlp.19153640</a>
A;Cross-references: GB:M17361; NID:9153639; PIDN:AAA88588.1; PID:9153640
A;Reference number: A33128

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C;Species
C;Date: 3
C;Accessi
R;Honda,
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 A;Accession: A33128
A;Status: prelimina
A;Molecule type: DN
 A;Experimental source: GS-5
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene from Streptococcus mutans.
A;Reference number: A33135; MUID:87308013; PMID:3040685
A;Accession: C33135
 8
 dextransucrase (EC 2.4.1.5) precursor - C;Speciles: Streptococcus mutans C;Date: 30-Sep-193 #sequence_revision C;Accession: A45866
 A; Molecule type: DNA
A; Residues: 1-1375 < UED>
 Gene 69, 101-109, 1988
A;Title: Sequence analysis of the gtfC gene from Streptococcus mutans GS-5
A;Reference number: JT0345; MUID:89137980; PMID:2976010
 C;Accession: JT0345; C33135
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 C;Species: Streptococcus mutans
C;Date: 31-Mar-1992 #sequence_revision 31-Mar-1992 #text_change
 dextransucrase (EC 2.4.1.5) precursor - Streptococcus mutans (strain N_iAlternate names: sucrose 6-glucosyltransferase
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 A; Cross-references: GB:M17361
 A; Molecule type: DNA
A; Residues: 1-349 <SHI>
 RESULT
 A;Description: catalyzes the synthesis of both water-soluble and
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Best Local S
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;35-1375/Product: glucosytransferase #status predicted <MAT>
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;1318-1337/Domain: cpl repeat homology <CP3>
 Status: preliminary
 Accession: JT0345
 ;Function:
 Gene: gtfC
 Genetics:
 Query Match
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 water-insoluble glucan
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 GS-5)
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J. Gen. Microbiol. 136, 2099-2105, 1990
A;Title: Nucleotide sequence of the Streptococcus mutans
A;Reference number: A45866; MUID:91100958; PMID:2148600
A;Accession: A45866
 C;Accession: T31098
R;Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, FEMS Microbiol. Lett. 159, 307-315, 1998
A;Title: Cloning and sequencing of a gene coding for an A;Reference number: Z20981; MUID:98164374; PMID:9503626
A;Accession: T31098
 F;1127-1146/Domain: cpl repeat homology <CP2>
F;1192-1211/Domain: cpl repeat homology <CP3>
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A;Residues: 1-1508 <MON>
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A;Experimental'source: strain NRRL B-1299
C;Genetics:
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 A;Cross-references: GB:M29296
C;Superfamily: cpl repeat homology
C;Keywords: 9lycosyltransferase; hexos
F;181-201/Domain: cpl repeat homology
 A; Molecule type: DNA
A; Residues: 1-1431 <HON>
 A;Status: preliminary
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C;Species: Streptococcus sobrinus
C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992
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A41483
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A;Molecule type: DNA
A;Residues: 1-1365 <GIL>
A;Cross-references: GB:M30943; NID:g153652; PIDN:AAA26898.1; PID:g153653
 Infect. Immun. 58, 2452-2458, 1990
A, Tille: Analysis of the Streptococ
A, Reference number: A41483; MUID:90
A, Accession: A41483
 C; Accession: A41483
R; Gilmore, K.S.; Ru
 A; Gene: dsrB
 A;Status: preliminary; translated from
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 ANQHLSILEDWSHNDPEYVKD
 produces dextran composed only of alpha(1-6) glucosidic bonds
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33; MUID:90316665; PMID:214
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57.1%;
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2; Mismatches
 Score 68; DB 2;
Pred. No. 0.046;
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A;Gene: gtfS
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
 RESULT 9
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C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999
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C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-
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A;Molecule type: DNA
A;Residues: 1-1449 <JAF>
 R;Jaffe, R.I.
submitted to the EMBL Data Library, February 1998
s;Description: Streptococcus sallvarius V1477 gtfN.
A;Reference number: Z20854
 C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change
C;Accession: T30552
 glucosyltransferase N - Streptococcus salivarius (fragment) C_2Species: Streptococcus salivarius
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 A;Residues: 1-1449 <SIM>
A;Cross-references: EMBL:L35495; NID:g662378; PID:g662379; PIDN:AAC41412.1
 A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030 A;Accession: T30857
 R;Simpson, C.L.;
 C; Accession:
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 C;Genetics:
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 A;Gene:
 A;Molecule type: DNA
A;Residues: 1-1449 <
 A;Status: preliminary; translated from GB/EMBL/DDBJ
 Infect. Immun. 63, 609-621
 A; Accession: T30552
 Matches
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 Query Match
Best Local :
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 1 ANNHVSIVEAWSDNDTPYLHD 21
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 ANNHVSIVEAWSDNDTPYLHD 21
 AIKHLSILEAWSHNDAYYNED 556
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 Giffard, P.M.; Jacques, N.A.
 Conservative
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#sequence_revision 22-Oct-1999
 56.3%;
57.1%;
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57.1%;
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Pred. No. 0.54;
2; Mismatches
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Pred. No. 0.058;
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 Gaps
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R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least two A;Reference number: A44811; MUID:92148377; PMID:1838391
 A;Cross-references: EMBL:L35928; NID:g662380; PID:g662381; C;Genetics:
 Infect. Immun. 63, 609-621, 1995
A;Title: Streptococcus sallvarius ATCC 25975 possesses at least two genes coding for A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Molecule type: DNA
A;Residues: 1-1599 <JAC>
A;Cross-references: EMBL:Z11872; NID:g47530; PIDN:CAA77898.1;
A;Cross-references: EMCC 25975
A;Experimental source: ATCC 25975
R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least target number: A44811; MUID:92148377; PMID:1838391
A;Accession: S28810
 C;Species: Streptococcus salivarius
C;Date: 16-Sep-1992 #sequence revision 16-Sep-1992
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A;Note: sequence extracted from NCBI backbone (NCBIN:81050, NCBIP:81052)
 glucosyltransferase (EC 2.4.1.-) I - Streptococcus salivarius C;Species: Streptococcus salivarius
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 A; Molecule type: DNA
A; Residues: 1-1577 <SIM>
 R;Simpson,
 glucosyltransferase (EC 2.4.1.-) S - C;Species: Streptococcus palining.
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 A; Accession: A44811
 A44811
 A;Gene: gtfm
 A; Status: preliminary; translated
 A; Accession: T30858
 C;Accession: T30858
 A; Reference number: S22726
A; Accession: S22737
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 A;Gene:
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 C.L.;
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A; Molecule type: A; Residues: 1-51

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RyTheologis, A.; Boker, J.R.; Palm, C.J.; Federspiel, N.A.; Kaul, S.; White, O.; Alonso, Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Creasy, T.H.; Dewar, K.; ansen, N.F.; Hughes, B.; Huizar, L.
Nature 408, 816-820, 2000

Nature 408, 816-820, 2000

A;Authors: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykin, E.; Kim, C. C.A.; Li, Y.; Lin, X.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Marziali, Rizzo, M.; Rooney, T.; Rowley, D.; Sakano, H.
Rizzo, M.; Rooney, T.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon, A;Authors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon, Rer, M.; Wu, D.; Yu, G.; Fraser, C.M.; Venter, J.C.; Davis, R.W.
A;Reference and analysis of chromosome 1 of the plant Arabidopsis.
A;Reference number: A86141; MUID:21016719; PMID:11130712
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C;Keywords: glycosyltransferase; hexosyltransferase
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 hypothetical protein [imported] - Arabidopsis thaliana
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C;Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 31-Mar-2001
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 A;Cross-references: EMBL:Z11873 C;Genetics:
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 A,Contents: annotation; protein coding region
A,Note: melther amino acid nor nucleotide sequence is given
R,Chen, M.R.; Hsu, T.Y.; Lin, S.W.; Chen, J.Y.; Yang, C.S.
J. Gen. Virol. 72, 3047-3055, 1991
 A;Cross-references: EMBL:V01555; NID:g59074; PIDN:CAA24831.1; PID:g1334895
R;Baer, R.; Bankier, A.T.; Biggin, M.D.; Deininger, P.L.; Farrell, P.J.; Gibson,
Nature 310, 207-211, 1984
 Mol. Biol. Med. 1, 21-45, 1983
A;Title: Sequence analysis of the 17,166 bp EcoRI fragment C of B95-8 Epstein-Barr virus
A;Reference number: A93065; MUID:85035713; PMID:6092825
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C;Species: human herpesvirus 4, Epstein-Barr virus
C;Date: 25-Feb-1985 #sequence revision 25-Feb-1985 #text_change 16-Jul-1999
C;Accession: C43044; JQ1381; A03784; A03794; S33036
C;Bankler, A.T.; Deininger, P.L.; Farrell, P.J.; Barrell, B.G.
Mol. Biol Med. 1, 21-45, 1983
 A;Cross-references: GB:AE005172; NID:g8954041; PIDN:AAF82215.1; GSPDB:GN00141 C;Genetics:
A;Map position: 1
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A;Reference number: A03794; MUID:84270667; PMID:6087149
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A; Residues: 1-336 < BAN>
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A;Residues: 1-175 <STO>
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A;Reference number: JQ1381; MUID:92113548; PMID:1662696
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A;Residues: 1-336 <CHE>
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 A; Notecut. Fig. DNA
A; Molecule type: DNA
A; Residues: 1-524 <HET>
A; Residues: 1-524 <HET>
A; Cross-references: GB: AE004206; GB: AE003852; NID: 99655749; PIDN: AAF94427.1;
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C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 02-Feb-2001
C;Accession: D82220
C;Accession: D82220
R;Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; I chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I Chardson, D.; Brobleva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I 1, R.R.; McKalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 405, 477-483, 2000
 A;Cross-references: GB:S77132; NID:g243314; PIDN:AAB21113.1; PID:g243315 C;Superfamily: Epstein-Barr virus BGLF2 protein
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Copyright (c) 1993 - 2003 Compugen Ltd.
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 This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the European Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entities requires a license agreement (See http://www.isb-sor send an email to license@isb-sib.ch).
 J. Bacteriol. 169:4271-4278(1987).
 Ferretti J.J., Gilpin M.L., Russell R.R.B.; "Nucleotide sequence of a glucosyltransferase sobrinus MFe28.";
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 Streptococcus downei (Streptococcus sobrinus).
 15-SEP-2003 (Rel. 42, Last annotation update) Glucosyltransferase-I precursor (EC 2.4.1.5)
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InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; pr0473; CW binding_1; 16.
Pfam; PF02324; Glyco hydro_70; 1.
Transferase; Glycosyltransferase; Signal;
SIGNAL 1 38 POTENTIAL.
 MEDLINE=87308014; PubMed=3040686;
 SEQUENCE FROM N.A
 EMBL: M17391; AAC63063.1;
 (Sucrose 6-glucosyltransferase)
 N
 AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl} (N) = D-fructose + {(1,6)-alpha-D-glucosyl} (N+1).

SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CARIES.

MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA MISCELLANEOUS: GTF-I SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,5-LINKED GLUCCASE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH FORMS OF GLUCANS.

SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-BINDING PROTEIN FROM S.MUTANS.

SIMILARITY: Contains 19 cell wall binding repeats.
 FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECA OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
 STRDO
 477
 щ
 21;
 Similarity
 ANNHUSIVEAWSDNDTPYLHD 497
 ANNHVSIVEAWSDNDTPYLHD
 1093
1093
1093
1158
11222
1227
1287
1402
1514
1577
 Conservative
 STANDARD;
 AA:
 1592
1592
1142
1207
1272
 1451
1563
 1592
 100.0%;
 176167
 Lactobacillales; Streptococcaceae;
 Last
 Created)
 sequence update)
 M.
 0
 GLUCAN-BINDING (APPROXIMATE).
6.5 X TANDEM REPEATS.
 Score 119; DB 1;
Pred. No. 1.1e-10;
 PRT;
 21
 (INCOMPLETE).
BC0A66D079351ECF CRC64;
 Mismatches
 1597 AA
 (See http://www.isb-sib.ch/announce,
 Repeat;
 (GTF-I) (Dextransucrase)
 0;
 gene
 Length 1592;
 Indels
 Dental caries
 from Streptococcus
 restrictions on
 EMBL outstation
 a collaboration
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 BECAUSE
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RESULT 3
GTFB_STRMU
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 Matches
 Query Match
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 REPEAT
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 Proc. PUNCTION:
 REPEAT
REPEAT
 DOMAIN
 GTFB STRMU STANDARD; PRT; 1476 AA. P08937; 069381; 069384; 069387; 069390; 06939 (1-NOV-1988 (Rel. 0), Created) 28-FEB-2003 (Rel. 41, Last sequence update) 15-SEP-2003 (Rel. 42, Last annotation update) Glucosyltransferase-I precursor (EC 2.4.1.5) (Sucrose 6-glucosyltransferase).
 SEQUENCE
 REPEAT
 REPEAT
 REPEAT
 REPEAT
 Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J., Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Qian Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti J.J., "Genome sequence of Streptococcus mutans UA159, a cariogenic dental
 STRAIN=MT4239 / Serotype C, MT4245 / Serotype E, MT4467 / Serotype E, and MT8148 / Serotype C; MEDLINE=98231643; PubMed=9570124;
 MEDIINE-87308013; PubMed=3040685;
Shiroza T., Ueda S., Kuramitsu H.K.;
"Sequence analysis of the gtfB gene from Streptococcus mutans.";
J. Bacteriol. 169:4263-4270(1987).
 DOMAIN
 - -
 STRAIN=UA159 / ATCC 700610 / Serotype MEDLINE=22295063; PubMed=12397186;
 Streptococcus mutans.
 Fujiwara T., Terao Y.
Kimura S., Hamada S.;
 SEQUENCE FROM N.A.
 Bacteria; Firmicutes;
 Streptococcus mutans.
 GTFB OR SMU.1004.
 <u>:</u>
 SEQUENCE FROM N.A
 FEMS Microbiol. Lett.
 "Molecular analyses of glucosyltransferase genes
 SEQUENCE FROM N.A.
 NCBI_TaxID=1309;
 pathogen.'
 C. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAU OF THEIR ABILITY TO ADHERE TO SWOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fraction of the colline of the catalytic activity: Sucrose + (1,6)-alpha-D-glucosyl)(N) = D-fraction of the colline of the catalytic activity:
fructose + ((1,6)-alpha-D-glucosyl)(N+1)
SUBCELLULAR LOCATION: Secreted.
DISEASE: DENTAL CARIES.
 483
 21;
 ш
 Similarity
 ANNHVSIVEAWSDNDTPYLHD
 ANNHVSIVEAWSDNDTPYLHD 21
 39
1099
1099
1099
1163
1163
11227
1227
12352
14065
 Conservative
 AA,
 1597
 1597
1050
1597
1597
1132
1132
12277
1342
1455
1455
 Y., Hoshino T.,
 177080
 100.0%;
 100.0%;
 161:331-336(1998)
 Lactobacillales; Streptococcaceae,
 B REPEAT.
AC REPEAT.
B REPEAT.
AC REPEAT.
AC REPEAT (INCOMPLETE).
 MW A
 0,
 AC REPEAT.
AC REPEAT.
AC REPEAT.
 CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE)
 A REPEAT
 1.25 A,
 Score
Pred.
 GLUCOSYLTRANSFERASE-I
 503
 Mismatches
 069390; 069396;
 B9E86A200868798E CRC64;
 Kawabata
 119;
 2 B, AND 5 AC REPEATS
 G
 1.1e-10;
 DB 1;
 · s.,
 (GTF-I) (Dextransucrase)
 Ooshima
 Length 1597;
 among strains of
 MT4251 / Serotype
 Indels
 رناج.
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 Sobue
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 Gaps
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EMBL; M17361; AAA89588.1; --
EMBL; D88651; BAA26101.1; --
EMBL; D88654; BAA26105.1; --
EMBL; D88657; BAA26109.1; --
EMBL; D88660; BAA26113.1; --
EMBL; D89670; BAA26119.1; --
EMBL; D89977; BAA26119.1; --
EMBL; AE014940; AANS8705.1; --
EMBL; AE014940; ANS8705.1; --
EMBL; AE014940; A
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 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
 REPEAT
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 entities
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 DOMAIN
 Transferase;
 VARIANT
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 send
 European Bioinformatics Institute. They by non-profit institutions as long a fifed and this statement is not removed.
 BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 10 cell wall
 FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
 1,3-LINKED GLUCOSE ANI
WATER-SOLUBLE GLUCANS
 MISCELLANEOUS:
 BINDING PROTEIN FROM
 an
 requires a license agreement (So
an email to license@isb-sib.ch).
 proteome.
 1097
1097
1161
1161
1225
1225
1235
1420
1420
63
 1086
1158
1163
1168
1182
1182
1234
1263
1263
 399
474
512
519
701
708
938
 168
276
 Glycosyltransferase; Signal;
 78
 34
1476
1051
1476
1130
1130
1270
1210
1275
 1086
1158
1163
1163
1168
1182
1234
1263
1263
 1405
1470
 GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA COSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES BOTH GLUCANS (ALPHA 1,6-GLUCOSE).
 970
 964
 399
474
512
519
701
708
938
957
 168
276
 78
 665
 5.
5.
7 (IN STRAIN MT4239).
7 -> 1 (IN STRAIN GS-5).
7 -> 1 (IN STRAIN GS-5).
7 -> 1 (IN STRAIN GS-5).
7 -> 2 (IN STRAINS GS-5, MT4245, MMT4467 AND MT8148).
8 -> 6 (IN STRAIN MT4251).
8 -> 6 (IN STRAIN MT4251).
8 -> 1 (IN STRAIN MT4251).
9 -> 1 (IN STRAIN MT4251).
1 -> 1 (IN STRAIN MT4251).
1 -> 1 (IN STRAIN MT4239).
1 -> 1 (IN STRAIN MT8148).
5 -> 1 (IN STRAIN MT8148).
7 -> 1 (IN STRAIN MT8148).
7 -> 1 (IN STRAIN MT8148).
 POTENTIAL.
GLUCOSYLTRANSFERASE-I.
CATALYTIC (APPROXIMATE)
GLUCAN-BINDING (APPROXI
A REPEAT.
5 X TANDEM REPEATS.
 ADS ->
MT4467)
 AND MT4467)
SV -> NT (I
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 ASSEXEES
 MT4467)
 FGKPVE

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 (See http://www.isb-sib.ch/announce/
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N STRAIN N
N STRAIN N
N STRAIN N
N STRAIN M
N STRAIN M
N STRAIN M
N STRAIN M
N STRAINS
 (APPROXIMATE)
 YGTPVA
 STRAIN
STRAIN
 There are no rest
 STRAIN
 (IN STRAINS
 Repeat; Dental
 (APPROXIMATE).
 Usage
 IN MT4239).
IN MT4239).
IN MT4251).
IN MT8148).
 AND
 N MT4239).
N MT8148).
 repeats.
 SOME
 GS-5,
 STRAINS
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 GS-5,
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 A GLUCAN-
 MT4239 AND
 GS-5, MT4239
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GTFC_STRMU
ID GTFC_S
AC P13470
DT 01-NVD
DT 28-PEB
DT 15-SEP
DE GLUCOS
DE GTFC O
OS STREVE
OC STRAIN
RC STRAIN
RX MEDLLIN
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STRAIN
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 8
 Best
 Matches
 Query Match
 GTEC STRMU STANDARU;

GTEC STRMU STANDARU;

P13470; 069382; 069385; 069388; 069391; 069397; F.

P13470; 069382; 069385; 069388; 069391; 069397; F.

P13470; 069382; 069385; 069388; 069391; 069397; F.

P13470; 1988; 1989; 19
 CONFLICT
 CONFLICT
 STRAIN=MI4239 / Serotype C, MT4245
MT4467 / Serotype E, and MT8148 / S
MEDLINE=98231643; PubMed=9570124;
Fujiwara T., Terao Y., Hoshino T.,
 VARIANT
 VARIANT
 VARIANT
 VARIANT
 VARIANT
 MEDLINE=22295063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,
Carson M.B., Najar F., Lai H., White J., Roe B.A., Ferretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
"Genome sequence of Streptococcus mutans UA159, a cariogenic of
 STRAIN=GS-5;
 SEQUENCE FROM N.A.
 Streptococcus
 Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
 Shiroza T., Ueda S., Kuramitsu H.K.;
"Sequence analysis of the gttB gene from Streptococcus mutans.";
"Sequence. 169:4263-4270(1987).

J. Bacteriol. 169:4263-4270(1987).

-!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGH.
 "Genome sequence pathogen.";
 Gene 69:101-109(1988)
 Ueda S., Shiroza
 MEDLINE=89137980; PubMed=2976010
 STRAIN=GS-5
 SEQUENCE OF
 SEQUENCE FROM N.A.
STRAIN=UA159 / ATCC 700610
 FEMS Microbiol.
 Streptococcus
 Kimura S., Hamada S.;
"Molecular analyses of glucosyltransferase
 SEQUENCE
 Ueda S., Shiroza T., Kurar
"Sequence analysis of the
 MEDLINE=87308013;
 Local
 481
 Natl.
 ۳
 Similarity 85. 18; Conservative
 ANNHVSIVEAWSDNDTPYLHD
 FROM N.A.
 ANDHLSILEAWSDNDTPYLHD
 1329
1394
 1310
1476
 1459
570
800
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 1272
 1-349
 Acad. Sci. U.S.A.
 mutans."
 Lett.
 Ã,
 1310
 1329
1394
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 PubMed=3040685;
S., Kuramitsu H.K.;
 FROM N.A.
 90.8%;
 Kuramitsu
 165846
 161:331-336(1998).
 gtfc
 MW H
 ω
 AND MT8148)
Y -> H (IN :
R -> A (IN)
 AND MT8148)
S -> G (IN
AND MT8148)
 EXTRACELLULAR GLUCANS, THAT ARE THOUGHT
 AND MT8148)
S -> G (IN
 Score 108;
Pred. No. 5
 H -> A
A <- H
 Serotype
 ADQDVRVAASTAPSTDGK (IN REF. 1).
 99:14434-14439(2002).
 gene
 501
 21
 Mismatches
 > L (IN REF. 1).
9C6E09F731B4CBCF
 5 / Serotype
Serotype C;
 Kawabata
 (IN
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REF. 1)
 STRAINS
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 Streptococcus
 8e-09
 DB 1;
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 (GTF-SI)
 MT4467)
 GS-5,
 GS-5,
 Length 1476;
 V
 Ooshima
 P05427;
 GS-5,
 among strains
 MT4251
 CRC64;
 Indels
 LIKMFALRLARPHOOMA
 AND MT4467)
, MT4239, MT
 MT4239,
 MT4239,
 mutans
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 Serotype
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 0;
 MT4467
 Qian
J.J.;
 MT4467
 MT4467
 GS-5
 of.
 Gaps
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EMBL; M22054; AAA88592.1; -.
EMBL; D88652; BAA26102.1; -.
EMBL; D88655; BAA26106.1; -.
EMBL; D88658; BAA26110.1; -.
EMBL; D88658; BAA26114.1; -.
EMBL; D89661; BAA26120.1; -.
EMBL; D89978; BAA26120.1; -.
EMBL; M17361; AAN88706.1; -.
EMBL; M17361; AAA88589.1; -.
Interpro; IPR002479; CW binding.
Interpro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 1.
Pfam; PF02324; Glyco hydro 70; 1.
 entities
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 TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE OF THEIR ABILITY TO ADHERE TO SMOOTH SUFFACES AND MEDIATE THE AGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-frictose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CARIES:
DISEASE: DENTAL CARIES.
1,3-LINKED GLUCANIS (ALPHA 1,6-GLUCOSE). GTF-S SYNTHESIZES
WATER-SOLUBLE GLUCANS.

TORNS OF GLUCANS.
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 SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES BINDING PROTEIN FROM S.MUTANS. SIMILARITY: Contains 5 cell wall binding:
 proteome.
 1126
1126
1126
1126
1126
1169
1227
 601
614
727
734
734
964
1113
 600
 256
425
519
538
545
597
 Glycosyltransferase; Signal; Repeat; Dental caries;
 1455
1455
1455
1455
1455
1250
1230
1330
1330
1330
81
 601
614
727
734
734
1113
 106
116
126
 256
425
519
538
545
597
 GLUCOSYLTRANSFERASE-SI.
CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
2.4 A, 1 C AND 1 AC REPBATS.
A REPBAT.
A REPBAT.
C REPBAT.
C REPBAT.
AC REPBAT.
AC REPBAT.
AC REPBAT.
AC REPBAT.
IN STRAIN MT4239).
D -> U (IN STRAIN MT4239).
D -> V (IN STRAIN GS-5).
S -> A (IN STRAIN GS-5).
S -> A (IN STRAIN GS-5).
S -> PK (IN STRAIN GS-5, MT4
MT4467).
A -> V (IN STRAIN MT4251).
Y -> D (IN STRAINS MT4245 AND
Y -> P (IN STRAINS MT4245 AND
 AND MT8148)
R -> K (IN
R -> T (IN
AND MT8148)
A -> T (IN
M -> V (IN
T -> V (IN
A -> T (IN
A -> T (IN
A -> T (IN
A -> V (IN
A -> T (IN
 AND
 PEAT (INCOMPLETE).

I (IN STRAIN GS-5).

L (IN STRAIN MT4239).

V (IN STRAIN GS-5).

A (IN STRAINS GS-5 AND MT4467).

T (IN STRAIN GS-5).
 (IN STRAINS GS-5, MT4239
 N STRAIN GS-5).
N STRAIN MT8148).
N STRAIN MT8148).
N STRAIN MT8239).
N STRAIN MT4239).
N STRAIN MT4239).
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N STRAIN MT4239).
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 STRAINS GS-5 AND MT4467).
STRAIN MT4251).
 STRAIN MT8148)
 repeats.
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 MT4245,
 SOME
 MT4239,
 AND MT425
AND MT425
, MT4251,
 TO A GLUCAN
 AND
 MT4251, MT4467
 MT4251).
MT4251).
MT4251).
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CONFLICT
 GTFD STRMU STANDARD; PRT; 1462 AA. P49331; 069383; 069386; 069389; 069392; 069391 o1-FEB-1996 (Rel. 3), Created) 28-FEB-2003 (Rel. 41, Last sequence update) 15-SEP-2003 (Rel. 42, Last annotation update) Glucosyltransferase-S precursor (EC 2.4.1.5) (Sucrose 6-Jucosyltransferase).
 STRMU
 SEQUENCE
 VARIANT
 VARIANT
 VARIANT
 VARIANT
 GTFD OR SMU.910.
Streptococcus mutans.
 Fujiwara T., Terao Y., Hoshino T., Kawabaca
Kimura S., Hamada S.;
"Molecular analyses of glucosyltransferase
 "Nucleotide sequence of the Streptococcus the glucosyltransferase-S enzyme.";
J. Gen. Microbiol. 136:2099-2105(1990).
 MEDLINE=91100958; PubMed=2148600;
Honda O., Kato C., Kuramitsu H.K.;
 Bacteria; Firmicutes;
Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002).
-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT
TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL
OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND ME
AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
 PEMS
 Streptococcus mutans."
 Honda O., Kato C.,
 STRAIN=GS-5;
 SEQUENCE
 NCBI_TaxID=1309;
 STRAIN=UA159 / ATCC 700610 / Serot
MEDLINE=22295063; PubMed=12397186;
 Carson
 SEQUENCE FROM N.A
 pathogen.";
 Ajdic D.,
 Genome sequence
 n M.B., P.
Zhu H.,
 Similarity
 ANNHVSIVEAWSDNDTPYLHD
 ANDHLSILEAWSYNDTPYLHD
 FROM N.A.
 McShan W.M., McLaughlin R.E., Savic G., Chang J., B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., u H., Najar F., Lai H., White J., Roe B.A., Ferretti equence of Streptococcus mutans UA159, a cariogenic equence
 1377
1398
1424
1439
 1455
 1305
1326
1331
 1292
 Conservative
 ATCC
 ĀΑ;
 Lett.
 1377
1398
1424
1439
1444
1444
 1369
1326
1331
 1294
 Kuramitsu
 83.2%;
81.0%;
 700610 /
 162965
 161:331-336(1998)
 Lactobacillales; Streptococcaceae;
 I -> V (IN STRAIN MT8148).

T -> A (IN STRAINS GS-5, MT AND MT8148).

R -> K (IN STRAIN MT8148).

V -> I (IN STRAIN MT8148).

D -> N (IN STRAIN MT4239).

V -> I (IN STRAIN MT4239).

V -> I (IN STRAIN MT4239).
 W.
 بيا
••
 Score 99; DB 1;
Pred. No. 1.6e-0
 DGH ->
MT8148)
 QRNHWDYDYRRDFGRGSSSAVRFRHSRNGFFDNFFRF -
HASILSLMVFRLRESSLQSVKVVSNTMILIPEMKFVIVM
 TSSGNWYYFGNDGYALIGWHVVEGRRVYFDENGVYRYASHD
 QRLYFKSNGVQAKGELITERKGRIKYYDPNSGNEVRNRYVR
 MISSING
 Serotype
 (IN REF.
 527
 21
 Mismatches
 3CB455A99A4FEC86
 NGY
 Kawabata S.,
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 Ç;
 (IN
 069398;
 STRAIN
 .6e-07;
 mutans
 genes
 STRAINS
 (GTF-S) (Dextransucrase)
 'n
 Length 1455
 MT4245)
 Ooshima
 gtfD
 MT4251
 among
 CRC64;
 Indels
 GS-5,
 MT4239,
 AND
 MEDIATE THE
 gene
 strains
 ·Т.,
 ARE THO
 \
 MT4467
 Serotype
 MT8148)
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 THOUGHT
 , Qian ;
i J.J.;
dental
 MT4467
 BECAUSE
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 AND
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EMBL; M29296; AAA26895.1; -.
EMBL; D88653; BAA26103.1; -.
EMBL; D88656; BAA26107.1; -.
EMBL; D88659; BAA26111.1; -.
EMBL; D89659; BAA26111.1; -.
EMBL; D89979; BAA26121.1; -.
EMBL; D89979; BAA26121.1; -.
EMBL; AB9979; BAA26121.1; -.
EMBL; AB914932; AANS8619.1; -.
EMBL; AB914932; AANS8619.1; -.
EMBL; AB914932; Glyco_hydro_70; I.
Transferase; Glyco_hydro_70; I.
Transferase; Glycosyltransferase; Signal; Repeat; Dental caries;
 VARIANT
VARIANT
VARIANT
VARIANT
 VARIANT
VARIANT
VARIANT
 SIGNAL
CHAIN
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 ructose + {(1,6)-alpha-D-glucosyl}(N)
subcellular Locarion: Secreted.
DISEASE: DENTAL CARIES.
MISCELLANDON:
 FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
BINDING PROTEIN FROM S.MUTANS.
 MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (AL
1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES
WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZE
 BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 6 cell wall binding repeats.
 requires a license agreement (See http://www.isb-sib.ch/announce/
 proteome.
 email to license@isb-sib.ch).
 1232
1232
1296
 628
688
726
726
 301
313
317
328
350
 58
68
81
113
 135
137
 1462
1423
1295
1359
 301
313
317
317
328
350
 202
255
275
 132
135
137
 58
68
113
 19
 Y-> H (IN STRAINS GS-5, MT4239, MT4245

MT4251, MT4467 AND MT8148).

I-> V (IN STRAINS GS-5, MT4239, MT4245

MT4251, MT4467 AND MT8148).

K-> E (IN STRAIN MT4467).

A-> S (IN STRAINS MT4251 AND MT8148).

A-> T (IN STRAINS MT4251 AND MT8148).

T-> I (IN STRAINS MT4239 AND MT4245).

A-> V (IN STRAINS MT4239 AND MT4245 AND
 A -> S (IN S TDQGSEA -> A TDQGS -> ADX MT4245).
 MT425 V

MT425 V

K -> E

K -> S

A -> S

A -> V

H -> V

MT8148

D -> V

MT9148

D -> V

MT91
T -> A
MT4251,
D -> Y
E -> K
 POTENTIAL.
GLUCOSYLTRANSFERASE-S.
3 X 63 AA APPROXIMATE TANDEM REPEATS
 KKKYTQ
 MT4467)
 ļ
 (IN STRAINS GS-5, MT-
, MT4467 AND MT8148).
(IN STRAIN MT4251).
(IN STRAINS MT4245 A)
 -> EKEYTL (IN STRAIN MT4251).

(IN STRAIN MT4239).

A -> ADKGNOS (IN STRAIN MT4251

-> ADKGN (IN STRAINS MT4239 AN
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 (IN STRAIN MT4245)
(IN STRAINS MT4239 AND MT4251)
(IN STRAIN MT4239)
(IN STRAIN MT4239)
(IN STRAINS MT4239, MT4251 AND
 (IN STRAINS
 Ë
 MT4467
 STRAIN MT4245).
STRAINS GS-5, MT
4467 AND MT8148).
 STRAIN MT4239)
STRAIN MT8148)
 STRAINS
 STRAINS
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 GS-5
 MT4239,
 MT4245 AND MT4251)
 MT4239,
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 STRAIN MT4251)
AINS MT4239 AND
 AND MT4467).
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 SYNTHESIZES
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AC P236

AC P236

AC P236

AC P26

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AC P27

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AC P37

AC P37

AC P47

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 MEDLINE-90316665; PubMed-2142479; Gilmore K.S., Russell R.R., Ferretti J.J.; "Analysis of the Streptococcus downei gtfS gene, which specifies glucosyltransferase that synthesizes soluble glucans.";
 01-DEC-1992 (Rel. 24, Created)
01-DEC-1992 (Rel. 24, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Glucosyltransferase-S precursor (EC 2.4.1.5)
 SEQUENCE
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 Streptococcus
 Bacteria; Firmicutes;
 Streptococcus downei
 P29336;
 CONFLICT
 SEQUENCE FROM N.A.
 NCBI_TaxID=1317;
 EMBL; M30943; AAA26898.1; InterPro; IPR002479; CW_b
 1,6-GLUCOSE).
-!- SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.
-!- SIMILARITY: Contains 10 cell wall binding repeats.
 (Sucrose
 THERMIN. 58:2452-2458 (1990).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT FULLY TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAÇUE BECAL OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: SUCTOSE + { (1,6-alpha-D-glucosyl) (N) = D-fructose + { (1,6-alpha-D-glucosyl) (N+1) .

ENZYME REGULATION: GLUCAN SYNTHESIS BY GTF-S IS INDEPENDENT OF PRIMER GLUCAN UNLIKE GTF-I.

DISBASE: DENTAL CARIES.

MISCELLANBOUS: GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA MISCELLANBOUS: GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA
 STRDO
 495 AINHLSILEAWSDNDPQYNKD
 14;
 1 ANNHVSIVEAWSDNDTPYLHD
 Similarity
 6-glucosyltransferase)
 1059
1060
11080
11142
11198
11220
11280
11280
11290
11403
11403
11428
 1462
 Conservative
 AA;
 STANDARD
 1060
1060
11080
11142
11198
11220
1280
1282
1282
1290
12403
14403
 163387
 (Streptococcus sobrinus).; Lactobacillales; Streptococcaceae;
 66.7%;
 82
 CW_binding
 LG -> IR (IN STRAIN MT4251).

G -> R (IN STRAIN MT4245).

G -> R (IN STRAIN MT4239).

S -> N (IN STRAIN MT4239).

S -> N (IN STRAIN MT4251).

Y -> C (IN STRAIN MT4251).

F -> L (IN STRAIN MT4467).

Q -> P (IN STRAIN MT4467).

C -> P (IN STRAIN MT4245).

N -> D (IN STRAIN MT4245).

N -> D (IN STRAIN MT4245).

G -> R (IN STRAIN MT4245).

G -> R (IN STRAIN MT4245).

R -> K (IN STRAIN GS-5.

R -> K (IN STRAIN MT4467).

RYYDKNGSMYLYNKYVTLANGRRIGIDRWGIARYY ->

RYYDKNGSMYLYNKYVTLANGRRIGIDRWGIARYY ->
 ₩
;
 <u>د.</u>
 Score 74;
Pred. No.
 PRT;
 515
 21
 (IN
 Mismatches
 CE4A279C4D708645 CRC64;
 REF.
 1365 AA
 0.0015
 DB 1;
 (GTF-S) (Dextransucrase)
 5
 AND SOME TO A GLUCAN
 Length 1462;
 MT4467).
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 Query Match
Best Local S
Matches 12
 REPEAT
REPEAT
SEQUENCE
 21-JUL-1986
21-JUL-1986
15-DEC-1998
 REPEAT
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REPEAT
 CHAIN
REPEAT
REPEAT
 UL16_EBV
P03221;
 Pfam; PF01473; CW_binding_
Pfam; PF02324; Glyco_hydro
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 SEQUENCE FROM N.A.

MEDILINE=92113548; PubMed=1662696;

Chen M.R., Hsu T.Y., Lin S.W., Chen J.Y., Yang C.S.;

Chen M.R., Hsu T.Y., Lin S.W., Chen J.Y., Yang C.S.;

Chen M.R., Hsu T.Y., Lin S.W., Chen J.Y., Yang C.S.;

"Cloning and characterization of cDNA clones corresponding to transcripts from the BamHI G region of the Epstein-Barr virus and expression of BGLF2.";

J. Gen. Virol. 72:3047-3055(1991).

J. Gen. Virol. 72:3047-3055(1991).

J. GEN. VIROL. 72:3047-3055(1991).

HSV-6 ORFIIR, EHV-1 46, HCMV UL94, EBV BDLF2, AND VZV 44.
 MEDLINE-84270667; PubMed-6087149; Baer R., Bankier A.T., Biggin M.D., De Gibson T.J., Hatfull G., Hudson G.S., Tuffnell P.S., Barrell B.G.; "DNA sequence and expression of the B9 Nature 310:207-211(1984).
 SIGNAL
 Transferase;
 InterPro; IPR003318; Glyco_hydro_70
 EMBL; M60514; AAA45871.1; -.
EMBL; V01555; CAA24831.1; -.
EMBL; S77132; AAB21113.1; -.
PIR; C43044; QQBE40.
 Nature
[2]
 DOMAIN
 use by non-profit institutions as long modified and this statement is not remove entities requires a license agreement (S) or send an email to license@isb-sib.ch).
 Epstein-barr virus (strain Viruses, no
 BGLF2 protein.
 SEQUENCE FROM N.A.
 Gammaherpesvirinae;
 467
 Similarity
 AIDHLSILEAWSGNDNDYVKD
 ANNHVSIVEAWSDNDTPYLHD
 37
157
178
198
1062
1083
1150
1170
11225
1233
1331
1365
 (Rel. 01, Created)
(Rel. 01, Last sec
(Rel. 37, Last ann
 Conservative
 Glycosy
 STANDARD;
 ΑA;
 1352
 1061
1082
1102
1169
1190
1243
1308
 1365
177
 (strain B95-8) (Human herpesvirus 4).
ses, no RNA stage; Herpesviridae;
Lymphocryptovirus.
 56.3%;
57.1%;
 [transferase; Signal; Repeat; Dental caries
 151590
 UL16_UL94
 sequence
annotation
 MW.
 4;
 Score
Pred.
 CELL WALL
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 CELL
 OR 37
 GLUCOSYLTRANSFERASE-S
 PRT;
 487
 21
 Mismatches
 167296B5A2E8C476
 e update)
ion updat
 67;
No.
 (POTENTIAL)
 Deininger P.L., Fr., Satchwell S.C.,
 It is produced through a collaboration
 B95-8 Epstein-Barr virus genome.";
 336
 BINDING 3.

BINDING 4.

BINDING 5.

BINDING 6.

BINDING 7.

BINDING 9.

BINDING 9.

BINDING 10.
 update)
 (See http://www.isb-sib.ch/announce/
 0
 BINDING 1.
BINDING 2.
 (APPROXIMATE)
 DB 1;
0.018;
 8
 Length 1365;
 Indels
 CRC64;
 Farrell P.J., ., Seguin C.,
 EMBL outstation
 0;
 UL16
 genome
 Gaps
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2 NNHVSIVEAWSDNDTPYLH

Conservative

4;

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RESULT 8
G3PC_LEIME
ID G3PC_L
 片
 8
 SON
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 Matches
Query Match
Best Local S
Matches 8
 01-APR-1993
01-FEB-1994
28-FEB-2003
 Late protein. SEQUENCE 336 AA;
 Pfam; PF03044; UL16_UL94; Late protein.
 BINDING
ACT SITE
SEQUENCE
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 Glyceraldehyde
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 Eukaryota; Eugle
NCBI_TaxID=5665;
 Q01558;
 Michels P.A.M.
 Hannaert V.
 MEDLINE=93063042; PubMed=1435864;
 STRAIN=Ssp.
 SEQUENCE
 Leishmania mexicana.
 Glycolysis;
INIT MET
 TIGRFAMS; TIGRO1534; GAPI
PROSITE; PS00071; GAPDH;
 Pfam; PF00044; gpdh;
Pfam; PF02800; gpdh
 EMBL; X65220;
 (GAPDH).
 PRINTS; PR00078;
 InterPro; IPR000173; GAP_dhdi
 SUBCELLULAR LOCATION: Cytoplasmic. SIMILARITY: Belongs to the glycera
 dehydrogenase family.
 SUBUNIT: Homotetramer.
 LEIME
 B48445; B48445.
 216
 P06977;
 Similarity 7; Conserv
Similarity
8; Conserv
 AGAHVNILRGWTEDDSP
 ANNHVSIVEAWSDNDTP
 FROM N.A
 00071; GAPDH; 1.
00071; GAPDH; 1.
0xidoreductase; NAD.
0 BY SIMILARITY.
0 0 BY SIMILARITY.
148 GIXCERALDEHYDE 3-PHOSPHATE.
148 148 GIXCERALDEHYDE 3-PHOSPHATE.
175 175 ACTIVATES THIOL GROUP DURII
175 175 CRC64;
T-ength
 TIGR01534; GAPDH-I; 1.
 Euglenozoa;
 (Rel. 25, Created)
(Rel. 28, Last sequence update)
(Rel. 28, Last senotation update)
(Rel. 41, Last annotation update)
yde 3-phosphate dehydrogenase, cyt
 Mexicana;
 Conservative
 Blaauw M.,
 1GAD
 CAA46323.1;
 STANDARD;
 G3 PDHDRGNASE.
 36888 MW;
 41.2%;
 40.3%;
 Kinetoplastida; Trypanosomatidae; Leishmania.
 Kohl L.,
 _dhdrogenase
 6.
 Pred.
 Score 49;
 Score
Pred.
 PRT;
 840937A416D5584C
 glyceraldehyde 3-phosphate
 Mismatches
 Mismatches
 Allert S.,
 No.
 48;
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 DB 1;
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 DB 1;
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 Length 336
 Length 330
 CRC64;
 Indels
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 glyceraldehyde-3
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 (EC 1.2.1.12)
 phosphate
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RESULT 10
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 P47543;
01-FEB-1996 (Rel. 33, Creates
01-FEB-1996 (Rel. 33, Last as
28-FEB-2003 (Rel. 41, Last as
Glyceraldchyde 3-phosphate dd
GAPA OR GAP OR MG301
 Q03695;
01-NOV-1997
 YEAST
SEQUENCE FROM N.A.
STRAIN-ATCC 33530 / G-37;
MEDLINE=96026346; PubMed=7569993;
Fraser C.M., Gocayne J.D., White O., Adams M.D.,
Fleischmann R.D., Bult C.J., Kerlavage A.R., Sutt
 01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last seq
15-SEP-2003 (Rel. 42, Last ann
Hypothetical 35.0 kDa protein
YMR206W OR YM8325.07.
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 This
 Bowman S., Churcher C.M., Badcock K., Brown D., Chillingworth T., Connor R., Dedman K., Devlin K., Gentles S., Hamlin N., Hunt S., Jagels K., Lye G., Moule S., Odell C., Pearson D., Rajandream M.A., Rice P., Skelton J., Walsh S., Whitehead S., Barrell B.G.;
 Mycoplasma genitalium.
Bacteria; Firmicutes; Mollicutes; Mycoplasmataceae;
 G3P MYCGE
 SEQUENCE
 EMBL; Z48755; CAA88648.1; -.
 Nature 387:90-93(1997).
 "The nucleotide sequence of Saccharomyces cerevisiae chromosome XIII.";
 PubMed=9169872;
 SEQUENCE FROM N.
 NCBI_TaxID=4932;
 Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes; Saccharomycetales; Saccharomycetaceae; Saccharomyces.
 Saccharomyces cerevisiae (Baker's yeast).
 NCBI_TaxID=2097;
 DOMAIN
 Hypothetical protein.

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149
 -!- SIMILARITY: SOME,
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 S59448; S59448.
S0004819; YMR206W.
 YEAST
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 Similarity
9; Conserv
 NNHOFIARRESDSHIPSLH
 NNHVSIVEAWSDNDTPYLH 20
 313 AA;
 Conservative
 246
 / AB972;
 STANDARD;
 STANDARD;
 33, Created)
33, Last seq
 35017 MW;
 38.7%;
47.4%;
 Last sequence update)
Last annotation update)
protein in PFK2-HFA1 intergenic
 TO YEAST YNRO14W
 sequence update)
annotation update)
dehydrogenase (EC
 2;
 Score 46;
Pred. No.
 POLY-SER.
POLY-GLN.
POLY-SER.
pOLY-SER.
p0928FDE982577F0 CRC64;
 Pred. No. 6.9
2; Mismatches
 PRT;
 PRT;
 update)
 313
 DB 6.9;
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 Sutton
 1.2.1.12)
 Length 313;
 Clayton R.
 Mycoplasma
 G.,
 region
 (GAPDH)
 Kelley J.M.,
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RESULT 11
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 Matches
 InterPro; IPR000173; (InterPro; IPR006424; (InterPro; IPR006424; (Pfam; PF00044; gpdh; IPfam; PF02800; gpdh CPRINTS; PR00078; G3PDI
 SILF MOUSE
Q920G3;
28-FEB-2003
 Nguyen D.T., Utterback T.K., Sauuen J...., Pomb J.-F., Dougherty B.A., Bott K.F., Hu P Peterson S.N., Smith H.O., Hutchison C.A. I "The minimal gene complement of Mycoplasma"
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 EMBL; U39710; AAC71523.1; --
EMBL; U02213; AAD12507.1; --
EMBL; U02178; AAD12463.1; --
PIR; C64233; C64233.
HSSP; P17721; 1HDG.
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 "A survey of the Mycoplasma
 MEDLINE=94075230; PubMed=8253680; Peterson S.N., Hu P.-C., Bott K.F.,
 SEQUENCE OF 1-81 AND 279-337
STRAIN=ATCC 33530 / G-37;
 Science 270:397-403(1995).
 Fritchman J.L.,
 Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
MCBI TaxID=10090;
 Mus musculus
 SIGLECF.
 15-SEP-2003
Sialic acid
 SEQUENCE
 ACT_SITE
 TIGRFAMs; TIGR01534; GAPDH-:
PROSITE; PS00071; GAPDH; 1.
 28-FEB-2003
 rigk; MG301;
 ycolysis;
 dehydrogenase family.
 313
 œ
 Similarity
 VYAWYDNESSYVH 325
 VEAWSDNDTPYLH
 R00078; G3PDHDRGNASE.
TIGR01534; GAPDH-I; 1.
 337
 .L., Weidman J.F., Small K.V., Sandusky M., Fuhrm, Utterback T.R., Saudek D.M., Phillips C.A., Men. Dougherty B.A., Bott K.F., Hu P.-C., Lucier T.S. N., Smith H.O., Hutchison C.A. III, Venter J.C.; I gene complement of Mycoplasma genitalium.";
 Oxidoreductase; NAD; Complete proteome.
157 157 GLYCERALDEHYDE 3-PHOSPHATE
184 (BY SIMILARITY).
184 ACTIVATES THIOL GROUP DURING
(BY SIMILARITY).
(BY SIMILARITY).
 (Rel. 41, Created)
(Rel. 41, Last sequence update)
(Rel. 42, Last annotation update)
binding Ig-like lectin-F precurso
 Conservative
 (Mouse)
 AA;
 STANDARD;
 37097
 Chordata;
 GAP
 37.8%;
53.8%;
 _dhdrogenase
 Ψ.
 genitalium
 Score 45;
Pred. No.
 FROM
 Sciurognathi;
 Craniata; Vertebrata; Euteleostomi;
 FA1EA1966687006B CRC64;
 N.A.
 Hutchison
 569
 precursor
 DB
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 genome
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 Muridae; Murinae;
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 gene clusters.";
J. Biol. Chem. 2'
-!- FUNCTION: Put
 SEQUENCE FROM N.A.
STRAIN=C57BL/6;
MEDLINE=21576254;
 MEDLINE=21576254; PubMed=11579105;
Angata T., Hingorani R., Varki N.M., Varki A.;
"Cloning and characterization of a novel mouse Siglec, mSiglec-F:
differential evolution of the mouse and human (CD33) Siglec-3-related
 DISULFID
DISULFID
 TRANSMEM
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 the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
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 DISULFID CARBOHYD
 InterPro; IPR007110; Ig-like.
InterPro; IPR003598; Ig_c2.
InterPro; IPR003006; Ig_MHC.
 or send an email to license@isb-sib.ch).
 entities requires a license agreement
 DOMAIN
 DOMAIN
 DOMAIN
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 SIGNAL
 Cell adhesion;
 EMBL; AF293371; AAL11043.1; -.
 CARBOHYD
 CARBOHYD
 CARBOHYD
 CARBOHYD
 DISULFID
 Immunoglobulin
 SIMILARITY: Contains 1 immunoglobulin-like V-type domain. SIMILARITY: Contains 2 immunoglobulin-like C2-type domains.
 dependent binding to cells. Preferentially binds to alpha2,3-linked sialic acid. The sialic acid recognition site may be masked by cis interactions with sialic acids on the same cell surface. SUBCELLULAR LOCATION: Type I membrane protein.
TISSUE SPECIFICITY: Predominantly expressed by immature monocytic/myeloid lineage cells in bone marrow. Also found at
 immunoreceptor tyrosine-based inhibitor motif (ITIM). This is involved in downmodulation of cellular functions as the termination of the immune response. SIMILARITY: Belongs to the immunoglobulin superfamily. SIGI
 DOMAIN: Contains an intracytoplasmic motif referred as immunoreceptor tyrosine-based inhibitor motif (ITIM).
 lower levels in mature neutrophils and monocytes.
 SIMILARITY: Belongs to the immunoglobulin superfamily. SIGLEC (SIALIC ACID BINDING IGLIKE LECTIN) SUBFAMILY.
 ; pr00047; ig; 2.
r; sm00408; IGc2; 1.
rrE; PS50835; IG_LIKE; 2.
 \vdash
 Similarity
8; Conser
 ANNHVSIVEAWSDN
 SSNHRLSCEAWSON
 569
 4440
461
139
229
2536
559
559
559
265
265
265
265
269
200
200
200
200
200
 Conservative
 Putative adhesion molecule that mediates sialic-acid
 276:45128-45136(2001)
 Lectin;
 AA,
 domain;
 569
439
569
116
224
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 61476
 37.0%;
57.1%;
 Repeat
 Transmembrane; Signal; Glycoprotein.
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 SIAM-LIKE MOTIF.
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 Score 44;
Pred. No.
 IG-LIKE C2-TYPE 1.
IG-LIKE C2-TYPE 2.
 IG-LIKE V-TYPE.
 CYTOPLASMIC (POTENTIAL).
 EXTRACELLULAR (POTENTIAL)
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P53015;
01-0CT-1996
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 van Dyck
Nawrocki
 GO; GO:0030014; C:CCR4-NOT complex; IPI.
GO; GO:0006357; P:regulation of transcription
Hypothetical protein.
SEQUENCE 1122 AA; 128779 MW: BF3542R16CC7R
 Hypothetical YGR134W.
 SGD;
 entities requires a license agreement (Some send an email to license@isb-sib.ch).
 Saccharomycetales;
NCBI_TaxID=4932;
 Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
Saccharomycetales; Saccharomycetaceae; Saccharomyces
 01-OCT-1996
 CAEEL
 modified and this statement
 This SWISS-PROT entry is copyright. It is produ between the Swiss Institute of Bioinformatics the European Bioinformatics Institute. There a
 Nawrocki A., del Bino S., Goffeau A.;
Submitted (MAY-1996) to the EMBL/GenBank/DDBJ databases.
 SEQUENCE
 28-FEB-2003
 01-OCT-1996
 P53280;
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 Hypothetical F31E3.4.
 SEQUENCE FROM N.A. STRAIN-Bristol N2;
 NCBI_TaxID=6239;
 Eukaryota; Metazoa; Nemat
Rhabditidae; Peloderinae;
 entities requires a license agreement or send an email to license@ieh_cih ch
 Submitted (NOV-1995)
 Caenorhabditis elegans.
 Favello A.;
 -!- SIMILARITY:
 YEAST
 S64443; S64443.
S0003366; CAF130.
 110
 272919;
 Similarity 7; Conserv
 Α.,
 SSSYASIVLSWKDND 124
 ANNHVSIVEAWSDND 15
 FROM N.A.
 email to license@isb-sib.ch).
 (Rel. 34, Created)
(Rel. 34, Last sequence update)
(Rel. 41, Last annotation update)
 Conservative
 Skala J.,
del Bino S
 (Rel. 34, Created)
(Rel. 34, Last sequence update)
(Rel. 34, Last annotation update)
127.2 kDa protein F31E3.4 in chr
 S64443
 CAA97147.1; -.
 STANDARD;
 STANDARD;
 1995) to the EMBL/GenBank/DDBJ databases. TO YEAST PAN2 AND TO S. POMBE SPAC22G7.04.
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 Nematoda;
 37.0%;
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 de Wergifosse
S., Goffeau A.;
 oda, Chromadorea, Rhabditida, Rhabditoidea, Caenorhabditis.
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 Score 44;
 Pred. No.
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 PRT;
 Mismatches
 BF3542816CC78490 CRC64;
 PAS2-PRS5
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 (See http://www.isb-sib.ch/announce/
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 RA Kawai J., Shinagawa A., Shibata K., Yoshino M., Itoh M., Ishii Y.,
RA Arakawa T., Hara A., Fukunishi Y., Konno H., Adachi J., Fukuda S.,
RA Arakawa T., Hara A., Fukunishi Y., Konno H., Adachi J., Fukuda S.,
RA Arakawa K., Izawa M., Nishi K., Kiyosawa H., Kondo S., Yamanaka I.,
RA Aizawa K., Izawa M., Nishi K., Kiyosawa H., Kondo S., Yamanaka I.,
RA Kadota K., Matsuda H.A., Ashburner M., Batalov S., Casavant T.,
RA Kadota K., Matsuda H.A., Ashburner M., Batalov S., Casavant T.,
RA Kuehl P., Lewis S., Matsuo Y., Nikaido I., Pesole G., Quackenbush J.,
RA Schrimil L.M., Staubli F., Suzuki R., Tomita M., Wagner L., Washio T.,
RA Schrimil L.M., Staubli F., Suzuki R., Tomita M., Wagner L., Washio T.,
RA Sakai K., Okido T., Furuno M., Aono H., Baldarelli R., Barsh G.,
RA Blake J., Boffelli D., Bojunga N., Carninci P., de Bonaldo M.F.,
RA Brownstein M.J., Bult C., Fletcher C., Fujita M., Gariboldi M.,
RA Gustincich S., Hill D., Hofmann M., Hume D.A., Kamiya M., Lee N.H.,
RA Hyons P., Marchionni L., Mashina J., Mazzarelli J., Mombaerts P.,
RA Sasaki H., Sato K., Schoenbach C., Seya T., Shibata Y., Storch K.-F.,
RA Suzuki H., Toyo-oka K., Wang K.H., Weitz C., Whittaker C., Wilming L.,
RA Havashizaki Y.:
 Query Match
Best Local S
 Matches
 PGCV MOUSE
 SEQUENCE FROM N.A. (ISOFORMS V0; VI AND V2).
STRAIN=C57BL/6, and Swiss Webster; TISSUE-Brain;
MEDILINE-95122551; PubMed-7822336;
Ito K., Shinomura T., Zako M., Ujita M., Kimata K.;
"Multiple forms of mouse PG-M, a large chondroitin sulfate proteoglycan generated by alternative splicing.";
J. Biol. Chem. 270.958.066.1007.
 Q62059; Q62058; Q9CUU0;
Q1-NOV-1997 (Rel. 35, Created)
Q1-NOV-1997 (Rel. 35, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Versican core protein precursor (Large fibroblast
(Chondroitin sulfate proteoglycan core protein 2)
 InterPro; IPR006055; Exonuclea
Pfam; PF00929; Exonuclease; 1
SMART; SM00479; EXOIII; 1
 EMBL; U40935; AAA81687.1;
PIR; T16217; T16217.
WormPep; F31E3.4; CE01269
InterPro; IPR006055; Exon
 tissues.'
J. Biol.
 Bukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
 SEQUENCE OF 1-1692 FROM N.A. (ISOFC STRAIN=C57BL/6J; TISSUE=Skin; MEDLINE=21085860; PubMed=11217851;
 NCBI_TaxID=10090;
 Mus musculus
 SEQUENCE
 Hypothetical
 MEDLINE=95181355; PubMed=7876137; Zako M., Shinomura T., Ujita M., Ito K., "Expression of PG-M(V3), an alternatively
 SEQUENCE FROM N.A. (ISOFORM V3).
STRAIN=C57BL/6;
 CSPG2
 "Functional annotation of Nature 409:685-690(2001).
 315
 w
 Similarity 7; Conserv
 NHVSIVEAWSDNDTPYLHD
 NHCGIVNVFADRDQPQVNE
 Chem.
 Shinomura T., Ujita M., Ito K., Kimata K.; on of PG-M(V3), an alternatively spliced f chondroitin sulfate attachment in region
 1131 AA;
 Conservative
 protein.
 (Mouse)
 STANDARD;
 270:3914-3918(1995)
 CE01269.
 37.0%;
36.8%;
 127174 MW;
 Exonuclease
 a full-length
 5; Mismatches
 333
 21
 Pred.
 Score
 Craniata; Vertebrata; Euteleostomi;
Sciurognathi; Muridae; Murinae; Mus
 (ISOFORM
 PRT;
 DESA4AB0C309E7DE CRC64;
 No.
 44;
 V1).
 DB
 mouse
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 region in mouse and
 Length 1131;
 proteoglycan)
(PG-M).
 Indels
 form of PG-M
 Murinae; Mus
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 ming L.,
 Gaps
 human
 . ;
 0;
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PRINTS; PRO1265; LINKNODULE.

ProDom; PD000918; Link; 2.

SMART; SM00032; CCE; 1.

SMART; SM00034; CLECT; 1.

SMART; SM00019; EGF CA; 1.

SMART; SM00409; IG; 1.

SMART; SM00445; LINK; 2.

PROSITE; PS00010; ASX HYDROXYL; 1.

PROSITE; PS00011; CTYPE_LECTIN_1;

PROSITE; PS00041; CTYPE_LECTIN_2;

PROSITE; PS000122; EGF_1; 2.
 -!- TISSUE SPECIFICITY: V2 is found only in which the cartilage development.
-!- DEVELOPMENTAL STAGE: Disappears after the cartilage development.
-!- SIMILARITY: Contains 1 immunoglobulin-like V-type domain.
-!- SIMILARITY: Contains 2 link domains.
-!- SIMILARITY: Contains 2 EGF-like domains.
-!- SIMILARITY: Contains 1 C-type lectin family domain.
-!- SIMILARITY: Contains 1 Sushi (SCR) domain.
-!- SIMILARITY: BELONGS TO THE AGGRECAN/YERSICAN PROTEOGLYCAN FAMILY.
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 versican.";
J. Biol. Chem.
 Aspberg A., Adam
"Fibulin-1 is a]
 HSSP;
 PubMed=10400671;
 [4]
INTERACTION WITH
 MGD; MGI:102889; Cspc
InterPro; IPR000152;
InterPro; IPR000742;
 Pfam; PF00047; ig; 1.
Pfam; PF00059; lectin_c; 1.
Pfam; PF00084; sushi; 1.
Pfam; PF00193; Xlink; 2.
 Pfam; PF00008; EGF;
 InterPro; IPR000538; InterPro; IPR000436;
 InterPro; IPR003599;
InterPro; IPR003006;
InterPro; IPR001304;
 InterPro; IPR001881;
InterPro; IPR006209;
InterPro; IPR007110;
 Name=V3
 Name=V0
 Event=Alternative splicing; Named isoforms=4; Comment=Additional isoforms seem to exist;
 ALTERNATIVE PRODUCTS:
 SUBUNIT: Interacts with FBLN1.
SUBCELLULAR LOCATION: Secreted; extracellular
 FUNCTION: May play a role connecting cells with the
 Name=V2
 hyaluronic acid
 the regulation of cell motility, growth
 D16263; BAA03796.1;
D28599; -; NOT ANNO
D32040; BAA06802.1;
 IsoId=Q62059-2; Sequence=VSP_003087, VSP_003088;
 IsoId=Q62059-1; Sequence=Displayed;
 AK014525;
 IsoId=Q62059-3;
 , Adam S., Kostka
is a ligand for t
 d=Q62059-4; Sequence=VSP_003087, \
SPECIFICITY: V2 is found only in
 1EPG.
 274:20444-20449(1999)
 BAB29411.1; -.
 FBLN1
 Cspg2
 Asx hydroxyl.
EGF 2.
EGF Ca.
EGF like.
Ig-like.
 Ig.
Ig_MHC.
Lectin_C.
 Link.
Sushi_SCR_CCP.
 ANNOTATED_CDS
 Sequence=VSP_003089
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 Glycoprotein; Proteoglycan; Lectin; Signal; Repeat; EGF-like domain; Cal Hyaluronic acid; Alternative splicit SIGNAL 20 POTENT: CHAIN 21 3358 VERSIC!
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 PROSITE; PS01186; EGF 2; 1.
PROSITE; PS01187; EGF CA; 1.
PROSITE; PS50835; IG LIXE; 1.
PROSITE; PS01241; LINK; 2.
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167
265
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348
1658
1674
3358
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 Conservative
 AA;
 3052
3088
3126
3253
3316
 126
348
1658
1680
 3052
 3052
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 37.0%;
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 525
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 LINK 1.
LINK 2.
GAG-ALPHA
(GLUCOSAMINOGLYCAN)
 EGF-LIKE 1.
EGF-LIKE 1.
EGF-LIKE 2.
CTYPE LECTIN.
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 VERSICAN
 IG-LIKE V-TYPE.
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 Score 44;
 A -> G (IN REF. 3).
MISSING (IN REF. 3).
TVWNSNS -> QFGIQTA (IN REF. 3)
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 /FTId=VSP_003089.
Missing (in isoform
 P -> R (in isoform /FTId=VSP_003087.
 FTId=VSP
 Calcium;
 Mismatches
 071B80026BC0762D
 Extracellular matrix;
 (GLCNAC.
(GLCNAC.
 CORE
 003090
 003088
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 CALCIUM-BINDING (POTENTIAL)
 isoform V1).
 isoform
 .6e+02;
 Immunoglobulin domain;
 PROTEIN
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 <u>.</u>.
 Length 3358;
 ATTACHMENT DOMAIN)
 V3).
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 CRC64;
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 Gaps
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RESULT 15

G6PD_EGAPL
ID G6PD_EGAP
AC P2292
AC P
 KX MEDLINE-97251358; PubMed-9097040;

RA Itoh T., Alba H., Baba T., Fujita K., Hayashi K., Inada T.,

RA Isono K., Kasai H., Kimura S., Kitakawa M., Kitagawa M.,

RA Makino K., Miki T., Mizobuchi K., Mori H., Mori T., Motomura I.

RA Makade S., Nakamura Y., Nashimoto H., Nishio Y., Oshima T.,

RA Saito N., Sampei G., Seki Y., Sivasundaram S., Tagami H.,

RA Takeda J., Takemoto K., Wada C., Yamamoto Y., Horiuchi T.;

RA 460-kb DNA sequence of the Escherichia coli K-12 genome

"A 460-kb DNA sequence of the Escherichia coli K-12 genome

"Torresponding to the 40.1-50.0 min region on the linkage map."

L DNA Res. 3:379-392(1996).
 G6PD_ECOLI STANDARD; PRT; 4
P22992; P78069; Q60134; Q60139;
01-AUG-1991 (Rel. 19, Created)
01-NOV-1997 (Rel. 35, Last sequence up
28-FEB-2003 (Rel. 41, Last annotation
28-G1ucose-6-phosphate 1-dehydrogenase (Figure 1)
 SEQUENCE FROM N.A.
STRAIN=KI2 / MG1655;
MEDLINE=974266L7; PubMed=9278503;
MEDLINE=974266L7; PubMed=9278503;
Blattner F.R., Plunkett G. III, Bloch C.A., Perna N.T., Burland Blattner F.R., Plunkett G. III, Bloch C.A., Rode C.K., Mayhew G.F. Riley M., Collado-Vides J., Glaener J.D., Rode C.K., Mayhew G.F. Gregor J., Davis N.W., Kirkpatrick H.A., Goeden M.A., Rose D.J., Mau B., Shao Y.;
 Bacteria, Proteobacteria, Gammar
Enterobacteriaceae, Escherichia
NCBI_TaxID=562, 217992;
 ZWF OR B1852 OR C2265.
Escherichia coli, and
Escherichia coli O6
 Proc. Nat
[5]
SEQUENCE
 STRAIN-06:H1 / CFT073 / ATCC 700928;
STRAIN-06:H1 / CFT073 / PLAY71157;
WEDLINE-22388234; PubMed=12471157;
Welch R.A., Burland V., Plunkett G. III, Redford P., Roesch Welch R.A., Burland V., Plunkett G. III, Redford P., Roesch Mayhew G.F., Rose D.J., Zhou S.-R., Boutin A., Hackett J., S. Mayhew G.F., Rose D.J., Zhou S., Schwartz D.C., Perna N.T., Mobley H.L.T., Donnenberg M.S., Blattner F.R.; "Extensive mosaic structure revealed by the complete genome of uropathogenic Escherichia coli."; proc. Natl. Acad. Sci. U.S.A. 99:17020-17024(2002).
 Rowley D.L., Wolf R.E. Jr.;
"Molecular characterization of the Escherichia coliencoding glucose 6.phosphate dehydrogenase.";
J. Bacteriol. 173:968-977(1991).
 MEDLINE=91123224; PubMed=1704005; Rowley D.L., Wolf R.E. Jr.;
 SEQUENCE FROM N.A. STRAIN=K12;
 STRAIN-Various ECOR strains;
MEDLINE=95064015; PubMed=7973728;
Guttman D.S., Dykhuizen D.E.;
"Clonal divergence in Escherichia
not mutation.";
 "The complete genome sequence of Science 277:1453-1474(1997).
 SEQUENCE FROM N.A.
MEDLINE=93345818; PubMed=8344525;
Carter A.T., Pearson B.M., Dickinson J.R.,
"Sequence of the Escherichia coli K-12 edd
Entner-Doudoroff pathway.";
 SEQUENCE
 SEQUENCE OF
STRAIN=K12;
 Science 266:1380-1383(1994).
[6]
 FROM N.A.
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 OF 72-368 FROM N.A.
 321-491 FROM N.A.
 Gammaproteobacteria;
 Escherichia coli K-12.";
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 result of recombination,
 Enterobacteriales;
 (G6PD)
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 DR EMBL; M5500579; AAAC47755.1; -.

DR EMBL; D500279; AAC74922.1; -.

DR EMBL; D500279; BAA15660.1; -.

DR EMBL; D500281; BAA15600.1; -.

DR EMBL; U13783; AAA57018.1; -.

DR EMBL; U13783; AAA57019.1; -.

DR EMBL; U13784; AAA57020.1; -.

DR EMBL; U13785; AAA57020.1; -.

DR EMBL; U13786; AAA57020.1; -.

DR EMBL; U13787; AAA57022.1; -.

DR EMBL; U13799; AAA57023.1; -.

DR EMBL; U13791; AAA57023.1; -.

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DR EMBL; U13792; AAA57029.1; -.

DR EMBL; U13793; AAA57028.1; -.

DR EMBL; U13793; AAA57029.1; -.

DR EMBL; U13794; AAA57029.1; -.

DR EMBL; U13792; AAA57029.1; -.

DR EMBL; U13793; AAA57029.1; -.

DR EMBL; U13792; AAA57029.1; -.

DR PENJL; U13792; AAA57029.1; -.

DR PENJL; U13792; AAA57029.1; -.

DR PENJL; D69479; G6FD; 1.

DR PENJL; D69479; G6FD; 1.

DR PENJL; D69479; G6FD; D6PDTDGGENASE; 1.

DR PENJL; D
밁
 ş
 Query Match
Best Local Similarity
Matches 9; Conserv
 Gene 130:155-156(1993).

-!- CATALYTIC ACTIVITY: D-glucose 6-phosphate + NADP(+) = D-glucono-
-!- SIMILARITY: BELONGS TO THE GLUCOSE-6-PHOSPHATE DEHYDROGENASE
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 SEQUENCE
451 SITEAWAMDNDAP 463
 σ
 SIVEAWS-DNDTP 17
 491 AA; 55704 MW;
 Conservative
 36.6%; Score 43.5; I
69.2%; Pred. No. 30;
tive 1; Mismatches
 263F07D298EAFCD3 CRC64;
 DB 1;
 2; Indels
 Length 491;
 1; Gaps
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Search completed: November 13, 2003, 09:45:32 Job time : 7.56398 secs

7.3.

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Minimum
Maximum
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No.
 Perfect score:
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 Pred. No.
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 of hits satisfying chosen parameters:
 length:
 SPTREMBL 23:*

1: sp archea:*
2: sp bacteria
3: sp fungl:*
4: sp human:*
5: sp inverteb
6: sp mammal:*
7: sp mhc:*
8: sp organe!
9: sp phage:*
10: sp phage:*
11: sp rodent:
12: sp virus:*
13: sp vertebr
13: sp vertebr
14: sp unclass
15: sp vertebr
16: sp bacteri
17: sp_archeap
 US-09-290-049A-14
119
1 ANNHVSIVEAWSDND
 is the number of results predicted by chance to have ater than or equal to the score of the result being purived by analysis of the total score distribution.
Query
Match Length
 830525 seqs,
 Gapop 10.0 ,
 BLOSUM62
 November 13,
 Minimum Match
 Maximum Match 100%
Listing first 45 summaries
 ANNHVSIVEAWSDNDTPYLHD
 Copyright
 sp_unclassified:*
sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
 sp_archea:*
sp_bacteria:*
 sp_rodent:*
sp_virus:*
sp_vertebrate:*
 sp_mammal:*
 sp_invertebrate:*
 sp_plant:*
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 organelle:*
1590
1590
1016
2835
2835
1508
1508
1577
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1338
15527
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14449
14449
 GenCore version
(c) 1993 - 2003
 2003,
 Gapext
 258052604 residues
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 0.8
 Q9LCJ7
Q8G9Q2
Q9L46
Q9EZH5
052224
Q9LCH3
Q9LCH3
Q9LCH3
Q9ZAR4
 Q59983
Q55263
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 09:31:40 ;
 0.5
 SUMMARIES
 model
 21
 (without alignments)
171.224 Million cell updates/sec
 5.1.6
 Compugen Ltd
 Search time 31.6493 Seconds
 830525
 Q59983
Q51c167
Q91c267
Q91466
Q91466
C92224
Q91ch3
Q91ch3
Q54178
Q9wxj4
Q9wxj4
Q9xar4
Q9xar4
Q8kre1
Q8kre1
Q8kre1
 Description
 leuconostoc
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| 45                 | 45.5              | 46                | 46     | 46     | 46                 | 46              | 46                 | 46                | 46                | 46                 | 46                 | 46.5               | 46.5               | 46.5               | 47                 | 48     | 48                 | 48.5               | 49                 | 50                | 50                | 51                 | 53                 | 53                 | 55                 | ហ      | 56                 | 57     |
| 37.8               | 38.2              | 38.7              | 38.7   | 38.7   | 38.7               | 38.7            | 38.7               | 38.7              | 38.7              | 38.7               | 38.7               | 39.1               | 39.1               | 39.1               | 39.5               | 40.3   | 40.3               | 40.8               | 41.2               | 42.0              | 42.0              | 42.9               | 44.5               | 44.5               | 46.2               | 46.2   | 47.1               | 47.9   |
| 119                | 418               | 880               | 811    | 810    | 601                | 490             | 393                | 283               | 283               | 271                | 169                | 1604               | 214                | 212                | 193                | 380    | 184                | 282                | 524                | 630               | 601               | 1195               | 195                | 175                | 2057               | 1599   | 1518               | 1577   |
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## ALIGNMENTS

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01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5).
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SEQUENCE
 Sato S., Inote M., Handa N., Aizawa Y., Isobe Y., Katayama T
"DNA sequence of the glucosyltransferase gene of serotype d
Streptococcus sobrinus.";
DNA Seq. 4:19-27(1993).
EMBL; D13858; BAA02976.1; -.
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InterPro; IPR002479; CW_binding.
InterPro; IPR002479; CW_binding.
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EMBL; D63570; BAA09792.1; -
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01-OCT-2000
01-OCT-2000
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STRAIN-NRRL B-512F;
MEDLINE=20169623; PubMed=10705445;
Funane K., Mizuno K., Takahara H., Kobayashi
"Gene encoding a dextransucrase-like protein
"Geneenteroides NRRL B-512F.";
Biosci. Biotechnol. Biochem. 64:29-38(2000).
EMBL; AB02020; BAA90527.1; -.
 Q9LCJ7
 Sato S.;
 SEQUENCE FROM N.A. STRAIN=ATCC 33478;
 Streptococcus.
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GLUCOSYLTRANSFERASE.
 01-OCT-2002
 Leuconostoc mesenteroides.

Bacteria; Firmicutes; Lactobacillales; Leuconostoc
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 amino-acid sequences of water-insoluble-glucan synthetase from Streptococcus sobrinus ATCC 33478."; oshima Univ. Dental School 16:23-29(1996).
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01-MAR-2003 (TrEMBLrel. 23,
Dextransucrase (EC 2.4.1.5)
 "Molecular characterisation of DSR-E, an alpha-1,2 linkage synthesising dextransucrase with two catalytic domains."; J. Bacteriol. 184:5753-5761(2002).
 MEDLINE=22231661; PubMed=12270834; Bozonnet S., Dols-Lafargue M., Fabre Mondan P., Willemot R.M.;
 Leuconostoc mesentero:
Bacteria; Firmicutes;
 SEQUENCE FROM N.A.
STRAIN-NRRL B-1355;
Arguello-Morales M.A., Remaud-Simeon M., Pizzut S., Sarcabal P.,
Willemot R.M., Monsan P.;
Willemot R.M., Monsan P.;
"Sequence analysis of the gene encoding alternansucrase, a sucrose
"Sequence analysis of the gene encoding alternansucrase, a sucrose
glucosyltransferase from Leuconostoc mesenteroides NRRL B-1355.";
Submitted (OCT-1999) to the EMBL/GenBank/DDBJ databases.
EMBL; AJ250172; CAB76565.1; -
 Leuconostoc mesenteroides
Bacteria; Firmicutes; Laci
 01-OCT 2000 (TrEMBLrel. 15, 01-OCT 2000 (TrEMBLrel. 15, 01-OCT 2002 (TrEMBLrel. 22, Dextransucrase (EC 2.4.1.5).
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InterPro; IPR003318; Glyco hydro_70.
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 synthesizing only a a(1-6) glucan."; FEMS Microbiol. Lett. 0:0-0(1998).
EMBL, AF030129; AAB9543.1; -
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding 1; 14.
Pfam; PF02324; Glyco hydro 70; 1.
Glycosyltransferase; Transferase.
 01-JUN-1998
01-JUN-1998
01-OCT-2002
 Kim H.-S., Kim D., Ryu H.-J., Robyt J.F.;

"Leuconostoc mensenteroides B-742CB, a dextransucrase generated (AUG-2000) to the EMBL/GenBank/DDBJ databases.

EMBL; AF294469; AAG38021.1; -

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01-MAR-2001 (TrEMBLrel.
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 STRAIN=B-742CB;
Kim H.-S., Kim D.,
 Dextransucrase
 SEQUENCE FROM N.A.
 Monchois V., Remaud-Simeon M., Monsan P., Willemot R. "Cloning and sequencing of a gene coding for an extra dextransucrase (DSRB) from Leuconostoc mesenteroides
 Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lact
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01-OCT-2002 (TrembLrel. 2
Glucosyltransferase.
 "Purification, characterization, and molecular analysis encoding glucosyltransferase from Streptococcus oralis." Infect. Immun. 68:2475-2483(2000).
EMBL; AB025228; BBA95201.1; -.
InterPro: IPRODOZOGO.
 STRAIN=ATCC10557; PubMed=10768934; MEDLINE=20231779; PubMed=10768934;
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 glucosyltransferase and influences the gordonii Challis.";
J. Bacteriol. 174:3577-3586(1992).
EMBL; U12643; AAC43483.1;
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 MEDLINE=92276337; PubMed=1534326;
Sulavik M.C., Tardif G., Clewell D.B.;
"Identification of a gene, rgg, which:
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STRAIN=CHALLIS;
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Vickerman M.M., Sulavik M.C., Clewel
"Molecular analysis of Streptococcus
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 Dev. Biol.
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 Neubauer H., Bauche A., Mollet B.;
"Isolation and characterization of the dextransucrase Drawn of the Control of the Control of the Leuconostoc mesanteroides Loc4.";
Submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases EMBL; AY017384; AAG61158.1; ...
EMBL; AY017384; AAG61158.1; ...
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ID Q5526

DT Q5526

DT Q1-NO

DT Q1-NO

DT Q1-CC

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OC Strep

OC Strep

OC Strep

CO Strep

OC Strep

OC Strep

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RI Infec

DR Inter

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DR Pfam,

DR Pfam,

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 Query Match
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Matches 12
 **MEDINIB-55122197; PubMed=7822030;
**MEDINIB-55122197; PubMed=7822030;
**Simpson C.L., Giffard p.M., Jacques N.A.;
**Streptcocccus sallvarius ATCC 25975 possesses at least
f coding for primer-independent glucosyltransferases.";
Infect. Immun. 63:609-621(1995).
**EMBL; L35495; AAC41412.1; -..

**EMBL; L35495; AAC41412.1; -..

**EMBL; L35495; AAC41412.1; -..

**InterPro; IPR003218; Glyco_hydro_70.

R Pfam; pF01473; CW binding_1; 8.

**Pfam; pF01473; CW binding_1; 8.

**Pfam; pF01473; Glyco_hydro_70; 1.

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EMBL; AB089438; BACC07265.1;
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MEDLINB=21958684; PubMed=11960691;

Hanada N., Fukushima K., Nomura Y., Senpuku H., Hayakawa M.,

Mukasa H., Shiroza T., Abiko Y.;

"Cloning and nucleotide sequence analysis of the Streptococol

"Cloning gtfU gene that produces a highly branched water-sol
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 556
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 7; Indels
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488 HISILEAWSLNDNQYNED 505
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 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
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US-09-210-361-2
US-09-210-361-4
US-09-210-361-4
US-09-210-361-6
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US-09-008-172-2
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US-09-008-172-2
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US-09-604-957-6
US-09-604-957-7
US-09-604-957-7
US-09-604-957-7
US-09-604-957-3
US-09-134-0010-4514
US-09-134-0010-5458
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 US-09-252-991A-27960
US-09-252-991A-28000
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 model
 21
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Sequence 815, Appl
Sequence 815, Appl
Sequence 4514, Ap
Sequence 5458, Ap
Sequence 4, Appli
Sequence 31548, Ap
Sequence 6181, Ap
Patent No. 5290690
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 US-09-210-361-2
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 RESULT 1
US-09-007-999-2
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CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1998-01-20
EARLIER FILING DATE: 1998-01-20
 Sequence 2, Applic
Patent No. 6284479
 GENERAL INFORMATION:
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EARLIER
 APPLICANT: Nichols,
TITLE OF INVENTION:
TITLE OF INVENTION:
 481
 APPLICATION NUMBER: 08/485,243 FILING DATE: 1995-06-07
 Application US/09210361
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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 1627 1 US-07-6 3 3898 3 US-08-7 3 3898 3 US-08-7 9 130 4 US-09-2 9 130 4 US-09-2 9 130 4 US-09-2 9 130 4 US-09-2 15 259 2 US-08-4 15 2465 3 US-09-1 15 2466 3 US-09-1 15 2466 5 PCT-US-08-1 15 2485 3 US-09-1                                                                                                                                                                                                                                                                                               |
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| 100-100-100-100-100-100-100-100-100-100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

ALIGNMENTS

## ; TYPE: PRT ; ORGANISM: Streptococcus mutans US-09-007-999-2 SOFTWARE: FastSEQ for Windows Version 3.0 SEQ ID NO 2 LENGTH: 1475 GENERAL INFORMATION: APPLICANT: Nichols, Scott E. TITLE OF INVENTION: Substitutes for Modified Starch and TITLE OF INVENTION: Latexes in Paper Manufacture Sequence 2, Application US/09007999 Patent No. 6087559 PILE REFERENCE: 0356D CURRENT APPLICATION NUMBER: US/09/007,999 CURRENT FILING DATE: 1998-01-16 EARLIER APPLICATION NUMBER: 08/478,704 EARLIER FILING DATE: 1995-06-07 NUMBER OF SEQ ID NOS: 2 l Similarity 18; Conserv 1 ANNHVSIVEAWSDNDTPYLHD 21 ANDHLSILEAWSDNDTPYLHD 501 Conservative 90.8%; ω · Score 108; Pred. No. 1 Mismatches DB 3; 0 Length 1475; Indels 0

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Latexes in

Paper Manufacture

09/008,172

Scott E. Substitutes for Modified Starches

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 ; TYPE: PRT; ORGANISM: Streptococcus
US-09-210-361-2
 RESULT 3
US-09-740-274-2
 SOFTWARE: FASTSEQ for Windows \
SEQ ID NO 2
LENGTH: 1475
TYPE: PRT
ORGANISM: Streptococcus mutans
US-09-740-274-2
 RESULT 4
US-09-210-361-4
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 S
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SOFTWARE: FASTSEQ for Windows Version 3.0
SEQ ID NO 2
 PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-12
PRIOR PELICATION NUMBER:
PRIOR FILING DATE: 1998-01
PRIOR APPLICATION NUMBER:
 Sequence 2, Apprin
 Query Match
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Theres 18; Conserv
Sequence 4, Application US/09210361
Sequence 4, Application US/09210361
Patent NO. 6284479
Patent NO. 6284479
PATENT NICKMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches TITLE OF INVENTION: Latexes in Paper Manufacture FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
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EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
 CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
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 PRIOR FILING DATE: 1998-01-20 PRIOR APPLICATION NUMBER: 08/PRIOR FILING DATE: 1995-06-07
 PRIOR FILING DATE: 1995-0
PRIOR APPLICATION NUMBER:
 FILE REFERENCE:
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-co
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 PRIOR APPLICATION N
PRIOR FILING DATE:
 ENGTH: 1475
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 APPLICATION NUMBER:
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 Similarity
 Application US/09740274
 FastSEQ for Windows Version
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 0357CRD
 יייישבצ: 09/008,172
1998-01-16
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 1998-01-20
 Glucan-containing Compositions and Paper
 90.8%;
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 09/210,361
 09/009,620
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 08/482,711
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Pred. No. 1.3e-08;
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 NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 4
 GENERAL INFORMATION:
 Sequence 4, Application US/09740274 Patent No. 6465203
 Matches
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 SOFTWARE:
 EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
EARLIER PEPILCATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
 EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/009,620
EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
 Matches
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Best Local Similarity
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
 EARLIER FILING DATE: 1995-06-07
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PRIOR FILING DATE: 1995-0
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 PRIOR APPLICATION NUMBER:
 TITLE OF INVENTION: Glucan-containing Compositions and Paper
 ORGANISM: streptococcus mutans
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 ENGTH: 1375
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 507
 507 ANDHLSILEAWSYNDTPYLHD 527
 l Similarity
17; Conserv
 17;
 1 ANNHVSIVEAWSDNDTPYLHD 21
 ANDHLSILEAWSYNDTPYLHD 527
 ANNHVSIVEAWSDNDTPYLHD 21
 Nichols, Scott E.
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 1998-01-20
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 1995-06-07
 1998-01-16
 1998-12-11
 83.2%;
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 09/210,361
 09/009,620
 08/478,704
 08/482,711
 09/008,172
 08/485,243
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 Score 99; DB 3;
Pred. No. 3.2e-0
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RESULT 6 US-09-604-957-4 ; Sequence 4, Application US/09604957 ; Patent No. 6486314

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GENERAL INFORMATION:
APPLICANT: NICHOLS, SCOTT E.
FITTLE OF INVENTION: Substitutes for Modified Starch
FITTLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0357CR
CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
CURRENT FILING DATE: 1998-12-11
FARLIER FILING DATE: 1998-01-16
FEARLIER FILING DATE: 1998-01-16
FEARLIER APPLICATION NUMBER: 08/478,704
 ; LENGTH: 1430
; TYPE: PRT
; ORGANISM: Streptococcus mutans
US-09-008-172-2
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 RESULT 7
US-09-008-172-2
 US-09-604-957-4
 В
 SOFIMEL SEQ ID NO 4
 US-09-210-361-6
 RESULT 8
 Query Match
Best Local S
Matches 14
 GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0358D
CURRENT APPLICATION NUMBER: US/09/008,172
CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER PILING DATE: 1995-06-07
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Patent No. 6127602
 SOFTWARE: 1
SEQ ID NO 2
 APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR PILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
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APPLICANT: DIJKHUIZEN, LUBBE
 SOFTWARE: PatentIn Ver. 2.1
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FILING DATE: 1995-06-07
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 62.2%; Score 74; DB
66.7%; Pred. No. 0.00
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 ; ORGANISM: streptococcus mutans US-09-210-361-6
 RESULT 9
US-09-740-274-6
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 US-09-740-274-6
RESULT 10
US-09-604-957-5
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PRIOR APPLICATION NUMBER: 09/00
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Patent No. 6465203
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Best Local Similarity
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EARLIER FILING DATE: 1998-01-16
EARLIER FILING INTO NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
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SOFTWARE: FastSEQ for Windows Version
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EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
 CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
 APPLICANT: Nichols, TITLE OF INVENTION:
 PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-C
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-C
 FILE REFERENCE:
 TYPE: PRT
 ORGANISM: streptococcus mutans
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 1995-06-07
 1998-01-16
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 09/008,172
 08/485,243
 09/009,620
 08/478,704
 09/007,999
 08/482,711
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 Score 74; DB 4;
Pred. No. 0.003;
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 DB 3;
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 Length 1430;
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 Gaps
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GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN,
APPLICANT: DIJKHUIZEN, LUBBER

GERRITDINA HENDRIKA

DIJKHUIZEN, LUBBERT

Sequence 5, Application US/09604957 Patent No. 6486314

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 ; TYPE: PRT; CRGANISM: Leuconostoc mesenteroides
 US-08-793-824-2
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Best Local S
Matches 12
 , ORGANISM: Streptococcus salivarius US-08-793-824-2
 SOFTWARE: 1
SEQ ID NO 5
 Sequence 2, Application Patent No. 5981838
 CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
 APPLICANT:
Matches
 APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
 Query Match
Best Local Similarity
 GENERAL INFORMATION:
APPLICANT: Simpso
 TELEFAX: 61 2 957 6286
TELEX: 26547
INFORMATION FOR SEQ ID NO:
 ENGTH: 523
 APPLICANT: Simpson, Christine Lynn
APPLICANT: Giffard, Philip Morrison
APPLICANT: Jacques, Nicholas Anthony
TITLE OF INVENTION: Genetic Manipulation of Plants to
TITLE OF INVENTION: Increase Stored Carbohydrafac
 COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
 FILING DATE: 24-AUG-1994
TELECOMMUNICATION INFORMATION:
TELEPHONE: 61 2 9957 5944
TELEFAX: 61 2 957 6288
 TOPOLOGY: not
MOLECULE TYPE:
ORIGINAL SOURCE:
 PRIOR APPLICATION DATA:
 CORRESPONDENCE ADDRESS
 NUMBER OF SEQUENCES:
 SEQUENCE CHARACTERISTICS:
LENGTH: 1577 amino acids
 CITY: No. 5981838th Sydney STATE: New South Wales
 COUNTRY:
 STREET:
 APPLICATION NUMBER: AU PM7643 FILING DATE: 24-AUG-1994
 CLASSIFICATION:
 APPLICATION NUMBER: US/08/793,824
 STRANDEDNESS:
 DDRESSEE:
 75
 1 ANNHVSIVEAWSDNDTPYLHD 21
 l Similarity
 PatentIn Ver. 2.1
 2060
 Application US/08793824
 ANQHISILEDWSHNDPLYVTD 95
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 E: Griffith Hack & Co
Level 8, 168 Walker Street
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 Australia
 Conservative
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 protein
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 54.6%;
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 US-09-604-957-6
 RESULT 12
 ORGANISM: Leuconostoc mesenteroides US-09-604-957-6
 뮹
 US-09-499-203-2
 GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-TAN
RESULT 14
US-09-604-957-7
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 US-09-499-203-2
 Sequence 6, Applic Patent No. 6486314
 SOFTWARE: PatentIn Ver. 2.1 SEQ ID NO 6
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LENGTH: 2057
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CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
 GENERAL INFORMATION:
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 TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388
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 APPLICANT: KOSSMANN, Jens
APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules
FILE REFERENCE: 147-196P
 CURRENT APPLICATION NUMBER: US/09/499,203
CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
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Sequence 7, Application US/09604957 Patent No. 6486314

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TYPE: PRT
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US-09-604-957-3
 뭕
 Query Match
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Thes 7; Conservat
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Search completed: November 13, 2003, 09:48:01 Job time : 13.6351 secs
 GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
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CURRENT FILING DATE: 2000-06-28
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
 APPLICANT: LEER, ROBERT-JAN
ITTLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
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and is derived by analysis of the total score distribution.
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Copyright (c) 1993 - 2003 Compugen Ltd.
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| sequence to, Appr | Sequence 12  | · u   | 11           | equence 14114,   | equence /,    | equence      | _ 14U        | e 145, <i>t</i> | e 28981 | Φ<br>4. C | ٥               | 'n                 | e 22, AE | (D)          | 9 6            | 0             | 9 4  | 000         | 0 20           | e 14     | e 324, | e 26,            | o<br>U          | 13/          | 100   | e 11,    | 0 11,         | , ני       |               |

## ALIGNMENTS

US-09-740-274-2

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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR PILING DATE: 1998-12-11
PRIOR PPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
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PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 09/008,172
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Matches 18
 PRIOR APPLICATION NUMBER: 08/-
PRIOR FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FASTSEQ for Windows
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Patent No. US20020031826A1
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 FILE REFERENCE:
 APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
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TYPE: PRT
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481 ANDHISILEAWSDNDTPYLHD 501

US-09-740-274-4

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Matches 17; Conserv
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TYPE: PRT
ORGANISM: Streptococcus mutans
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 CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
 CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
 PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
 APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
FILE REFERENCE: BO43388-CIP
 PRIOR FILING DATE:
 TYPE: PRT ORGANISM: streptococcus mutans
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 ENGTH: 1375
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APPLICATION NUMBER: 09/
FILING DATE: 1998-01-16
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PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
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 US-09-995-749A-11
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 APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
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 TYPE: PRT
 ORGANISM: Leuconostoc mesenteroides
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 Scott E.
 62.2%;
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 8
 US-09-995-749A-12
 RESULT 6
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 US-09-995-749A-12
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
 APPLICANT: VAN GEEL-SCHUTTEN, G
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
 APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
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 APPLICANT: VAN GEEL-SCHUTTEN,
APPLICANT: DIJKHUIZEN, LUBBER
APPLICANT: RAHAOUI, HAKIM
 PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
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 LEER, ROBERT-JAN
 Application US/09995749A
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APPLICANT: VAN GEEL-SCHUTTEN,
APPLICANT: DIJKHUIZEN, LUBBER
 Sequence 2, Application US/09995749A Patent No. US20020155568A1
 Sequence 96, Applica publication No. US20 GENERAL INFORMATION:
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 APPLICANT: Herz, APPLICANT: Gottl
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APPLICANT: WHYTE, DAVID
APPLICANT: CHARKBEEL, SEAN
APPLICANT: CHARKBEEL, SEAN
APPLICANT: CHARKBEEL, SEAN
APPLICANT: MANNING, GERARD
APPLICANT: MANNING, GERARD
APPLICANT: MANNING, SUCHA
TITLE OF INVENTION: NOVEL PROTEASES
FILE REFERENCE: 038602/1214
CURRENT PILLING DATE: 2001-06-26
CURRENT FILLING DATE: 2001-06-26
 RESULT 12
US-10-195-144-17
 B
 Š
 Query Match
Best Local Similarity
""" Conserve
 ; TYPE: PRT; ORGANISM: Lawsonia intracellularis US-10-009-823A-1
 Query Match
Best Local Similarity 4/...
--hes 9; Conservative
 SEQ ID NO 73
 GENERAL INFORMATION:
 Sequence 1, Application US/10009823A Publication No. US20030157120A1
Sequence 17, Application US/10195144 Publication No. US20030126646A1 GENERAL INFORMATION:
 SOFTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 1 \,
 GENERAL INFORMATION:
 PRIOR APPLICATION NUMBER: 60/214,047
PRIOR FILING DATE: 2000-06-26
NUMBER OF SEQ ID NOS: 150
SOFTWARE: Patentin Ver. 2.1
 PRIOR APPLICATION NUMBER: PCT/AU00/00437
PRIOR PILING DATE: 2000-05-11
PRIOR APPLICATION NUMBER: US 60/133,973
 CURRENT APPLICATION NUMBER: US/10/009,823A
CURRENT FILING DATE: 2002-08-13
 APPLICANT: Ankenbauer, Robert G.
TITLE OF INVENTION: LAWSONIA DERIVED GENE AND RELATED FLGE
TITLE OF INVENTION: POLYEPTIDES, PEPTIDES AND PROTEINS AND THEIR USES
FILE REFERENCE: DAVI150.001APC
 APPLICANT:
 APPLICANT: Panaccio, Michael APPLICANT: Rosey, Everett Lee APPLICANT: Sinistraj, Meri APPLICANT: Hasse, Detlef
 PRIOR FILING DATE: 1999-05-13
 ENGTH: 1604
 LENGTH: 502
 294 VALLEVWKDNRTDDIPELH 312
 185
 σı
 1 ANNHVSIVEAWSDNDTP 17
 VSIVEAWSDN---DTPYLH 20
 ANPYFALLESWKGNGTP 201
 Parsons, Jim
 Conservative
 38.7%;
 39.1%;
 Mismatches
 Score 46.5; DB 9;
Pred. No. 2.4e+02;
 5
 Score 46; DB 12; Length 502; Pred. No. 79;
 Length 1604;
 Indels
 ω
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 0
 Gaps
 1;
 0
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; TYPE: PRT; ORGANISM: Raphanus sativum US-10-195-144-17
 뮹
 US-09-738-626-4571
 CURRENT APPLICATION NUMBER: US/10/195,144
CURRENT FILING DATE: 2002-10-01
PRIOR APPLICATION NUMBER: 60/305,026
PRIOR FILING DATE: 2001-07-12
PRIOR APPLICATION NUMBER: 60/305,363
PRIOR FILING DATE: 2001-07-13
PRIOR APPLICATION NUMBER: 60/308,736
PRIOR APPLICATION NUMBER: 60/308,736
PRIOR FILING DATE: 2001-07-30
NUMBER OF SEQ ID NOS: 128
SOFTWARE: Patentin Ver. 2.1
 APPLICANT: OZAKI, AKIO
TITLE OF INVENTION: NOVEL POLYNUCLECTIDES
FILE REFERENCE: 249-125
FURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR FILING DATE: 1999-12-16
PRIOR APPLICATION NUMBER: JP 00/159162
PRIOR PRILING DATE: 2000-04-07
PRIOR APPLICATION NUMBER: JP 00/280988
PRIOR FILING DATE: 2000-08-03
NUMBER OF SEQ ID NOS: 7059
8
 ORGANISM: Corynebacterium glutamicum US-09-738-626-4571
 SEQ ID NO 4571
LENGTH: 199
TYPE: PRT
 Query Match
Best Local Similarity 41.2%;
Matches 7; Conservative
 SOFTWARE: PatentIn Ver. SEQ ID NO 17
 GENERAL
 Sequence 4571, Application US/09738626
Publication No. US20020197605A1
 APPLICANT:
APPLICANT:
APPLICANT:
 TITLE OF INVENTION: NUCLEAR FERTILITY RESTORER GENES AND METHODS OF USE IN TITLE OF INVENTION: PLANTS FILE REFERENCE: 16313-0136
 APPLICANT: NAKAGAWA, SATOSHI
APPLICANT: MIZOGUCHI, HIROS
APPLICANT: ANDO, SEIKO
 APPLICANT: CHEUN APPLICANT: JIN,
 APPLICANT:
 APPLICANT:
 SOFTWARE: PatentIn ver. 3.0
 APPLICANT:
 APPLICANT:
 ENGTH: 1494
 Local Similarity nes 7; Conserv
 1130 NTISLASTWLQNSEPFL 1146
 INFORMATION
 7 IVEAWSDNDTPY 18
 NHVSIVEAWSDNDTPYL 19
 YOKOI, HARUHIKO
TATEISHI, NAOKO
SENOH, AKIHIRO
 DENDY, CHARLES
LANDRY, BENOIT S.
CHEUNG, WING
 FORMANOVA, NATASA
 IKEDA, MASATO
 MIZOGUCHI, HIROSHI
 Conservative
 HUA
 KEIKO
 MIKIRO
 37.8%;
58.3%;
 <u>س</u>
 Score 46; DB 15;
Pred. No. 2.7e+02;
 Mismatches
 Score 45;
Pred. No.
 Mismatches
 DB 10;
 Length 1494;
 Length 199;
 0
 0
 Gaps
 Gaps
 0,
 0
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177 LVEVWTDQDTRY 188

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Sequence 16, Application US/09924154

Sequence 16, Application US/09924154

; patent No. US20020127241A1

; GENERAL INFORMATION:
 APPLICANT: Narun, David L.

; APPLICANT: Sim, Kim L.

; CURRENT FILLENGION: Anti-Plasmodium Compositions and Methods of Use

; FILE REFERENCE: 05213-0465 43170-282105

; CURRENT APPLICATION NUMBER: US/09/924,154

; CURRENT FILLING DATE: 2001-08-07

; PRIOR APPLICATION NUMBER: US 60/223,525

; PRIOR FILING DATE: 2000-08-07

; PRIOR FILING DATE: 2000-08-07

; NUMBER OF SEQ ID NOS: 17

; SOFTWARE: PatentIn version 3.1

; SEQ ID NO 16

; CURRENT: 972

; TYPE: PRT

; ORGANISM: Mammalian

US-09-924-154-16
 Sequence 14923, Application US/10156761

Publication No. US20030119018A1

GENERAL INFORMATION:
APPLICANT: OMURA, SATOSHI
APPLICANT: ISHIKAWA, JUN
APPLICANT: HORIKAWA, JUN
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: HATTORI, WASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR FILING DATE: 2001-08-09
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NO 14923
LENGTH: 665
TYPE: PAT
ORGANISM: Streptomyces avermitilis
US-10-156-761-14923
 RESULT 14
US-10-156-761-14923
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 RESULT 15
US-09-924-154-16
Search completed: November 13, 2003, 10:29:04 Job time : 28.4692 secs
 멍
 8
 Query Match 37.8%; Score 45; DB 15; Length 665; Best Local Similarity 50.0%; Pred. No. 1.5e+02; Matches 9; Conservative 2; Mismatches 7; Indels
 Query Match 37.8%;
Best Local Similarity 44.4%;
Matches 8; Conservative
 304 NHTGVCLMEDDNDNQYLH 321
 88 NWTYLVEAWSDPVTTWRH 105
 3 NHVSIVEAWSDNDTPYLH 20
 3 NHVSIVEAWSDNDTPYLH 20
 Score 45; DB 10; Length 972;
Pred. No. 2.3e+02;
1; Mismatches 9; Indels
 o
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 0;
 Gaps
 0
 0
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Run on:
 OM protein - protein search, using sw model
 Scoring table:
 Sequence:
 Title:
Perfect score:
 Minimum DB seq length: 0
Maximum DB seq length: 2000000000
 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
 Total number of hits satisfying chosen parameters:
 Database
 November 13, 2003, 09:31:40; Search time 40.3507 Seconds (without alignments) 86.541 Million cell updates/sec
 1107863 seqs, 158726573 residues
 BLOSUM62
Gapop 10.0 , Gapext 0.5
 US-09-290-049A-15
110
 1 VPSYSFIRAHDSEVQDLIRNII 22
 11:
12:
13:
14:
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16:
17:
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19:
20:
 A Geneseq 19Jun03:*
1: /SIDS1/gcqdata/o
| SIDS1/gcgdata/geneseq/geneseqp-emb1/AA198.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-emb1/AA199.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:*
| SIDS1/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:*
 GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
 1107863
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

| 9 99               | 8 99               | 7 99               | 6 99               | 5 99               | 4 105              | 3 105              | 2 110              | 1 110              | Result<br>No. Score      |   |
|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------------|---|
|                    |                    | 90.0               |                    |                    |                    |                    |                    |                    | !                        | œ |
| 1475               | 1475               | 1475               | 1475               | 1475               | 1476               | 1017               | 1375               | 1375               | Query<br>Match Length DB |   |
| 23                 | 23                 | 23                 | 23                 | 23                 | 23                 | 23                 | 23                 | 23                 |                          |   |
| AAU98039           | AAU98033           | AAU98031           | AAU98030           | AAU98027           | AAU79284           | AAU79285           | AAU79288           | AAU98028           | ID                       |   |
| S. mutans grucosyr | s. mutans glucosyl | S. mutans glucosyl | S. mutans glucosyl | S. mutans glucosyl | Streptococcus muca | Streptococcus muca | Streptococcus muta | s. mutans glucosyl | Description              |   |

| XX          | XX 22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2                              | S F X F              | XX     | ž S.          | X X X X X                                                   | X II I      | X II        | <b>1</b> 88 | RES<br>AAU<br>ID                    |                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |
|-------------|----------------------------------------------------------------------|----------------------|--------|---------------|-------------------------------------------------------------|-------------|-------------|-------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| (NI)        | 11-1<br>07-1<br>07-1<br>16-1<br>20-1                                 | 14-MAR<br>19-DEC     | US2002 | Stre          | Gluc<br>coat<br>amyl                                        | S           | 27-A        | AAU9        | RESULT 1<br>AAU98028<br>ID AAU98028 |                                                                                                                                                 | 44444000000000000000000000000000000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10       |
| (NICH/) NIC | DEC-1998<br>JUN-1995<br>JUN-1995<br>JUN-1995<br>JAN-1998<br>JAN-1998 | MAR-2002<br>DEC-2000 | 03182  | Streptococcus | Glucosyltransferase coating composition amyloplast; vacuole | mutans g    | 27-AUG-2002 | AAU98028;   | 8028 st                             |                                                                                                                                                 | 4<br>4<br>4<br>4<br>4<br>4<br>4<br>5<br>5<br>5<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | •        |
| NICHOLS     | 10 10 10 10 10 10 10 10                                              |                      | 6-A1.  |               | ransferase composition t; vacuole                           | lucos       | (fi         |             | standard;                           |                                                                                                                                                 | 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 8891 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 8891 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88991 88 | 0        |
| Б           | 98US-000<br>98US-048<br>95US-048<br>95US-048<br>98US-000<br>98US-000 | 2000US-0740          |        | mutans.       | H                                                           | irst entry) |             | d; Protein; |                                     | 1475<br>1475<br>1475<br>1475<br>1475<br>1475<br>1475<br>12837<br>28327<br>28327<br>1430<br>1430<br>1430<br>1430<br>1430<br>1430<br>1430<br>1430 | 1475                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |
|             | 0361<br>8704<br>2711<br>5243<br>7999<br>8172                         | 0274                 |        |               | 4 m                                                         | eras        | સુ          |             |                                     |                                                                                                                                                 | 221121                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |
|             |                                                                      |                      |        |               | <pre>transgenic plant; n; starch; latex; manufacture.</pre> | e GTFC.     |             |             | 1375 AA.                            | ALIGNMENTS                                                                                                                                      | AAU98035 AAU398034 AAU98034 AAU98034 AAU98037 AAU98037 AAU98038 AAU98037 AAU98037 AAU98037 AAU98037 AAU98037 AAU98045 AAU98041 AAU98041 AAU98042 AAU98042 AAU98042 AAU98042 AAU98042 AAU98043 AAB998657 AAB998654 ABB98657 AAB998657 ABB98657                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AAU98040 |
|             |                                                                      |                      |        |               | <pre>paper sizing; thermoplastic molecule;</pre>            |             |             |             |                                     |                                                                                                                                                 | . mutans . mesent . mesent . mene- pextrane- pextrane- pextrane- pextrane- pextrane- pextrane- pextrane- pextrane- pextrane- pextran s . mutans . m |          |

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CC The invention an isolated protein comprising a glucosyltransferase CC (GTF) B polypeptide having changes at position from 1448V, D457N/D571K, CC D567T/D571KK, D457N/D571K, D567T/D571K, CC D567T/D571KK, D457N/D571K, D567T/D571K, CC D567T/D571KK, D567T/D571K, CC D567T/D571K, And K779Q or a GTF D polypeptide having CC changes at positions from T589D, T589E, M71D, M747D/T589D, and CC changes at positions from T589D, T589E, M71D, M747D/T589D, and CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC introduced with the vector, a transgenic plant comprising the comprising the polymucleotide operably linked to a CC promoter, a seed or tuber from the transgenic plant, a paper sizing and/or CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or CC with a gene encoding the mutant GTF, wild type or, starch, a latex, with a gene encoding the mutant GTF, wild type or, starch, a latex, cc the glucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a glucan is produced in the amyloplast and/or vacuole or a maize line CC comprising the glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant crall under plant growing CC conditions to produce a response plant growing the plant cell under plant of the CC regimerated plant, where the vector contains a transit sequence from CC conditions are useful as substitutes for and additions to modified starch cc plant growing the plant cell with the sequence from CC conditions are useful as substitutes for and additions to modified starch conditions in produced input materials that produce chemical effluents, paper conditions and input materials that produce by GTF, which utilises biologically produced input materials and inducing exhibit thermoplastic crowlearning and different
RESULT 2
AAU79288
ID AAU77
XX
AC AAU7
XX
DT 13-A
DT 13-A
XX
EX
BE Stre
XX
KW Anti
XX
OS Stre
 Ş
 덩
 Query Match
Best Local :
 Matches
 paper manufacture, comprises mutations in specific positions
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 N-PSDB; ABK52939
 WPI; 2002-414332/44.
 Nichols SE
 Disclosure; Page 30-33; 44pp; English
 Antibody; dental caries; water insoluble glucan synthetase; anti-caries; glucosyl transferase-B; immunotherapy.
 Sequence
 13-AUG-2002
 AAU79288 standard; Protein; 1375 AA
 Streptococcus mutans
 AAU79288
 present sequence represents GTFC.
 22;
 ۲
 Similarity
 VPSYSFIRAHDSEVODLIRNII 599
 VPSYSFIRAHDSEVQDLIRNII 22
 1375
 Conservative
 (first entry)
 mutans monoclonal antibody-related protein #5
 AA;
 100.0%;
 0; Mismatches
 Score 110; DB 23; Pred. No. 1.2e-09;
 Length
 1375;
 0
 Gaps
 0
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RESULT 3
AAU79285
IID AAU79285
IID AAU79285
AC AAU7
XX AAU7
DY 13-7
DY 3-7
DX Stre
XX Anti
XX Anti
XX Anti
XX Au7
DY 16-1
XX Au7
DY Au7
DR WPI
XX Au7
DR WPI
XX Au7
DR WPI
XX Au7
DR 밁
 Ś
 Query Match
Best Local
 Matches
 Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
 JP2002114709-A.
 inhibitive activity against water insoluble glucan synthetase of glucos transferase B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase B and is used in the immunotherapy of dental caries. This sequence represents a Streptococcus mutans monoclonal antibody-related
 The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17566) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having
 WPI; 2002-448101/48
 04-OCT-2000; 2000JP-0304889
 04-OCT-2000; 2000JP-0304889
 16-APR-2002
 Disclosure; Page 22-25; 28pp; Japanese.
 Streptococcus mutans monoclonal antibody-related protein #2
 AAU79285 standard; Protein; 1017
 Sequence
 protein.
 Antibody; dental caries; water insoluble glucan synthetase;
 13-AUG-2002
 AAU79285;
 Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
 Streptococcus mutans.
 anti-caries; glucosyl
 04-OCT-2000; 2000JP-0304889.
 04-OCT-2000; 2000JP-0304889.
 16-APR-2002.
 WPI; 2002-448101/48
 (UYNI-) UNIV NIPPON.
 578 VPSYSFIRAHDSEVODLIRNII 599
 1 VPSYSFIRAHDSEVQDLIRNII 22
 UNIV NIPPON
 Similarity
 1375 AA;
 Conservative
 (first entry)
 100.0%;
 transferase-B;
 0; Mismatches
 Score 110; DB 23;
Pred. No. 1.2e-09;
 A
 immunotherapy
 0
 Length
 1375;
 of
 0
 of
 glucosyl
 glucosyl
 Gaps
 glucosyl
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0,

Claim 4; Page 17-19;

28pp; Japanese

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AAUJ9204
AAU
 Best Loc
Matches
 Query Match
 Query Match
Matches
 The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM P-17565) or mouse-hybridoma MHP136 (FERM P-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyl transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This sequence represents a Streptococcus mutans monoclonal antibody-related
 The invention relates to a monoclonal antibody against dental caries and an anti-caries agent composed of a monoclonal antibody produced by Streptococcus mutans, particularly mouse-hybridoma MHP126 (FERM p-1756) or mouse-hybridoma MHP136 (FERM p-17567), against an enzyme having inhibitive activity against water insoluble glucan synthetase of glucosyl transferase-B. The monoclonal antibody specifically inhibits water insoluble glucan synthetase of Streptococcus mutans produced glucosyl transferase-B and is used in the immunotherapy of dental caries. This sequence represents a Streptococcus mutans monoclonal antibody-related
 Anti-caries agent composed of a monoclonal antibody against inhibitory enzyme against water insoluble glucan synthetase transferase-B (GTF-B) of Streptococcus mutans
 Streptococcus mutans monoclonal antibody-related protein
 AAU79284 standard;
 04-OCT-2000; 2000JP-0304889.
 JP2002114709-A
 Streptococcus mutans
 anti-caries;
 Antibody;
 13-AUG-2002
 04-OCT-2000; 2000JP-0304889
 16-APR-2002
 Sequence
 Claim 3; Page 13-16; 28pp; Japanese.
 (-INYU)
 Local
 Local Similarity
 2002-448101/48
 21;
 Similarity
 VPSYSFIRAHDSEVQDLIRNII 22
 VPSYSFIRAHDSEVQDLIRDII 539
 dental caries; water insoluble glucan synthetase;
 1017 AA;
 1476
 Conservative
Conservative
 glucosyl transferase-B; immunotherapy
 (first entry)
 ΑA
 Protein; 1476
 95.5%;
95.5%;
 95.5%;
 1,
 Score 105; DB 23; Pred. No. 6.2e-09;
 Score 105; DB 23;
Pred. No. 9.6e-09;
1; Mismatches 0;
 Mismatches
 0
 Length 1017;
 Length 1476;
 Indels
 #
 0,
 of an
 0
 glucosy.l
 Gaps
 Gaps
 0
 0
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ARBSULT 5
ARAUSHOUTS ID ARAUSHOUTS STANDSHOUTS ARAUSHOUTS ARAUSHOUTS ARAUSH ARA
 뮍
 δ
The invention an isolated protein comprising a glucosyltransferase CC (GTF) B polypeptide having changes at position from I448V, D457N, D571K, EC D567T, D457N/D571K, D567T, D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, I448V/D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, I448V/D457N/D571K, M77D571K, CC D567T/D571K/K1014T, I448V/D457N/D567T/D571K, M77D571K, CC D567T/D571K/K1014T, I448V/D457N/D567T/D571K, M77D571K, CC D567T/D571K, M77D571K, M77D571K
 Glucosyltransferase; GTFB; transgenic plant; coating composition; glucan; starch; latex; tamyloplast; vacuole; paper manufacture.
 US2002031826-A1
 Streptococcus mutans
 27-AUG-2002
 AAU98027;
 AAU98027
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000;
 WPI;
 16-JAN-1998;
16-JAN-1998;
 07-JUN-1995;
07-JUN-1995;
 Disclosure; Page 21-25; 44pp; English
 (NICH/) NICHOLS
 20-JAN-1998;
 mutans glucosyltransferase
 552
 2002-414332/44.
 <u>بــ</u>ـــ
 VPSYSFIRAHDSEVQDLIRNII
 standard; Protein; 1475
 VPSYSFIRAHDSEVQDLIRDII
 (first entry
 2000US-0740274
 95US-0478704.
95US-0482711.
95US-0485243.
 98US-0007999
98US-0008172
 98US-0009620
 98US-0210361
 SE.
 GTFB
 573
 22
 thermoplastic
 paper sizing;
 molecule;
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뮍 Ś

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ARUSULT 6
AAU98030
ID AAU99
XX AAU9
XX AAU9
XX AAU9
XX AAU9
XX Stre
XX Gluc
KW Gluc
KW Coat
KW Coat
KW amyl
XX XX
I 14-1
XX I 14-1
XX I 16-
PR 07--
PR 016-
PR 07--
PR 01--
PR 07--
PR 01--
PR 07--
PR 01--
PR 07--
PR 0
 Matches
 Query Match
Best Local &
 ribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents GTFB.
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
 Sequence
 Glucosyltransferase; GTFB; transgenic coating composition; glucan; starch; l
 AAU98030 standard; Protein; 1475 AA
 Misc-difference
 Synthetic
 Streptococcus mutans
 coating composition; glucan; starch; latex; thermoplast
amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase
 27-AUG-2002
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 16-JAN-1998;
20-JAN-1998;
 WPI; 2002-414332/44
 Nichols
 (NICH/) NICHOLS
 16-JAN-1998
 07-JUN-1995;
 20;
 1 VPSYSFIRAHDSEVQDLIRNII 22
 Similarity
 SE;
 VPSYSFIRAHDSEVQDLIADII 573
 Page -; 44pp;
 1475
 Conservative
 (first entry)
 2000US-0740274.
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
 98US-0007999.
98US-0008172.
98US-0009620.
 B
 448
 တ
 Location/Qualifiers
 /note= "Wild-type Ile substituted by Val"
 90.0%;
 English.
 1; Mismatches
 Score 99;
Pred. No.
 GTFB mutant I448V.
 c plant; paper sizing;
latex; thermoplastic molecule;
 le-07;
 DB 23;
 Length 1475;
 0;
 Gaps
 0
```

The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,

14-MAR-2002

```
CC changes at positions from TS89D, TS89E, N471D/TS9D, and CC changes at positions from TS89D, TS89E, N471D/TS9D, and CC (Anny) (TS89E) Also included are a glucan produced by the GTF mutant, CC (AN71D/TS9D) Also included are a glucan produced by the GTF mutant, CC (AN71D/TS9D) Also included are a glucan produced by the GTF mutant, CC (AN71D/TS9D) Also included are a glucan produced by the GTF mutant, CC (AN71D/TS9D) Also included are a glucan produced by the GTF mutant, CC (AN71D/TS9D) Also included and included are a glucan produced by the GTF mutant, CC (AN71D/TS9D) Also included and the polymucleotide operably linked to a cc produced with the vector, a transgenic plant comprising the polymucleotide operably linked to a cc thermoplastic molecule or their combinations or glucan and starch where cc the glucan is produced in the amyloplast and/or vacuole or a maize line contributions of plant and starch where cc the glucan is produced in the amyloplast and/or vacuole or a maize line cc their contributions of plant and starch where cc polymucleotide for a time sufficient to produce in the plant and or paper sizing the glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing a plant cell under plant growing the plant cell under plant of the polymucleotide for a time sufficient to produce the glucan in the comply and a paper and the plant cell under plant growing the plant cell under plant growing a comply contribute of portations at transit sequence from the produce at time glucan in the collowing a substitutes for and additions to motified exact in paper manufacture. Unlike prior art techniques, which and induced the plant, which will sea that produce the plant and exact best in the amyloplast of potato or the vacuole of sugar beet. CC discontined that produce a plant and additions to modified starch complicating the glucan produce deficient for and additions to modified starch which and the produced in paper manufacture. Unlike produced the pro
 AAU98031
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 8
 Query Match
Best Local
 Matches
 Sequence
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase GTFB
 27-AUG-2002
 AAU98031;
 AAU98031 standard; Protein; 1475
 Streptococcus
 Synthetic
 US2002031826-A1
 Misc-difference
 552 VPSYSFIRAHDSEVODLIADII 573
 Н
 Similarity
 VPSYSFIRAHDSEVQDLIRNII 22
 1475
 Conservative
 (first entry)
 mutans
 AA,
 Location/Qualifiers
 /note= "Wild-type Asp substituted by Asn"
 90.0%;
 Score 99; DB 23;
Pred. No. 1e-07;
 Mismatches
 mutant D457N
 Length 1475;
 Indels
 0;
 Gaps
```

0

19-DEC-2000;

2000US-0740274.

```
CC D567T/, K1014T, D457N/D567T/, D457N/D57LK/K1014T,
CC D567T/D57LK/K1014T, 1448V/D57D567T/D57LK/K779Q/K1014T,
CC D567T/D57LK/K1014T, 1448V/D57D567T/D57LK/K779Q/K1014T,
CC HA71D/T589E Also included are a glucan produced by the GTF mutant,
CC an isolated polynuclectide which encodes P1 or P2, or its complementary
CC conting composition comprising the polynuclectide operably linked to a
CC promoter, a vector comprising the polynuclectide operably linked to a
CC produced with the vector, a transgenic plant comprising the following the GTF mutant,
CC coating composition comprising a glucan produced in a plant transformed
CC with a gene encoding the mutant GTF, wild type or, starch, a latex,
CC the glucan is produced in the amyloplast and/or vacuole or a maize line
CC deficient in starch biosynthesis, transformed with a gene encoding a
CC glucan is produced in the amyloplast and/or vacuole or a maize line
CC comprising the glucan (paper sizing/coating agent). The vector is useful
CC comprising the glucan in a plant. The method comprises transforming a
CC plant cell with the vector, growing the plant cell under plant apaper
CC comprising the glucan in a plant to produce the glucan in the
CC regenerated plant, where the vector contains a transit sequence from
CC require input mater the vector contains a transit sequence from
CC require input materials that produce a transgenic plant, and glucan
CC conditions are useful as substitutes for and additions to modified starch
CC conditions are useful as substitutes for and additions to modified starch
CC conditions are useful as substitutes for and additions to modified starch
CC require input materials that produce chemical effluents, paper
CC require input materials produce chemical effluents, paper
CC require input materials or the vacuole of sugar beet.
CC manifacture utilising the glucan produced by GTF, which utilises
CC manifacture utilising the glucan produced by GTF, which utilises
CC manifacture utilises and the produced by the index produced in the modified starc
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 Query Match
Best Local 9
 07-JUN-1995
 11-DEC-1998;
07-JUN-1995;
 paper manufacture, comprises mutations in specific positions
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 07-JUN-1995
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44
 (NICH/)
 16-JAN-1998
 Sequence
 invention an
 ш
 vention an isolated protein comprising a glucosyltransferase B polypeptide having changes at position from I448V, D457N, KI014T, D457N/D567T, D457N/D571K, D567T/D571K,
 NICHOLS
 Similarity
 VPSYSFIRAHDSEVQDLIADII 573
 VPSYSFIRAHDSEVQDLIRNII 22
 1475
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 ß
 Š
 90.0%;
 ۲.
 Score 99;
Pred. No.
 Mismatches
 1e-07;
 В
 23;
 Length 1475;
 Indels
 0
 0
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cc (GTP) B polypeptide having changes at position from I448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, D457N/D567T, D57TK/K7790/K104T, CC D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K7790/K104T, CC P1567Y/D571K/K7790/K104T, D457N/D57T/D571K/K7790/K104T, D457N/D57T/D571K/K7790/K104T, CC P169A/X17DA/X171A, and K7790 or a GTF D polypeptide having CC CAM71D/T589E. Also included are a glucan produced by the GTF mutant, CC P169A/X17DA/X171A, and K7790 or a GTF D polypeptide having the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC promoter, a vector comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a promoter, a vector comprising the plant comprising the plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition or their combinations or glucan and starch where the glucan is produced or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan (paper sizing/coating agent). The vector is useful comprising the plucan in a plant. The method comprises transforming a plant cell with the vector is useful conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the polynucleotide for a time sufficient to produce the glucan in the polynucleotide for a time sufficient to produce the glucan in the polynucleotide for a time sufficient to produce the glucan in the polynucleotide for a time sufficient to produce the glucan in the polynucleotide for a time sufficient to produce the glucan in the polynucleotide for a plant transformed the polynucleotide for a plant transformed the polynucleotide for a plant transformed the polynucleotide
 ARBSULT 8
AAU98033
ID AAU99
XX AAU9
XX AAU9
XX AAU9
XX AAU9
XX Stre
XXX Glu
XXX Stre
XXX Key
FI Miss
FI Miss
FI Miss
FI Miss
FI Miss
CC PR 11-1
PR 11-1
PR 11-1
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PR 11-1
PR 11-
 16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 AAU98033 standard; Protein; 1475
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
 S. mutans glucosyltransferase GTFB mutant K1014T
 AAU98033;
 Synthetic
 Streptococcus
 amyloplast;
 Misc-difference 1014
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
 WPI; 2002-414332/44.
 Nichols
 07-JUN-1995
 07-JUN-1995
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000; 2000US-0740274
 14-MAR-2002
 US2002031826-A1
 Claim 36; Page -; 44pp; English.
 (NICH/) NICHOLS
 manufacture, comprises mutations in specific
 SE;
 vacuole; paper manufacture; mutant; mutein.
 (first
 mutans
 95US-0485243.
98US-0007999.
98US-0008172.
 98US-0210361
 98US-0009620
 95US-0478704
95US-0482711
 ໝ
 Location/Qualifiers
 /note= "Wild-type Lys substituted by Thr"
 entry)
 positions
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XX AAU8
XX AAU8
XX AAU8
XX Glu
XX Glu
XX Glu
XX Stri
OS Stri
OS Synn
XX Synn
XX I1-
PR 11-
PR
 뭐
 S
 Query Match
Best Local S
Matches 20
 chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in later 12 m as
 16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase
 Sequence
 Nesc-difference 169..171
 Synthetic
 Streptococcus mutans
 27-AUG-2002
 AAU98039
 AAU98039 standard; Protein; 1475 AA
 Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
 US2002031826-A1
 14-MAR-2002
 (NICH/)
 19-DEC-2000;
 the information in claim
 552
 2002-414332/44
 1 VPSYSFIRAHDSEVQDLIRNII 22
 20;
 Similarity
 SE;
 NICHOLS
 VPSYSFIRAHDSEVQDLIADII 573
 1475 AA;
 Conservative
 (first entry)
 2000US-0740274.
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 Ø
 Ala-Ala-Ala"
 /note= "Wild-type Tyr-Tyr-Tyr substituted
 90.0%;
90.9%;
 Score 99; DB 23;
Pred. No. 1e-07;
 GTFB mutant YYY169-171AAA.
 Mismatches
 Length 1475;
 Indels
 0;
 Gaps
 0
```

Claim

36; Page -;

English

US2002031826-AJ

```
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from IA48V, D457N, CC D567T/D571K, M14T, D457N/D567T, D457N/D571K, CC D567T/D571K, M71D4T, And K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/Y171A, and K779Q or a GTF D polypeptide by and cy169A/Y170A/
 RESULT 10
AAU98040
밁
 Ş
 Matches
 Query Match
Best Local
 Sequence
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 g. mutans glucosyltransferase GTFB mutant K779Q
 27-AUG-2002
 AAU98040
 Streptococcus mutans
 Synthetic.
 Misc-difference
 552
 20;
 Similarity
 VPSYSFIRAHDSEVQDLIRNII 22
 VPSYSFIRAHDSEVODLIADII 573
 standard;
 1475 AA;
 Conservative
 (first entry)
 Location/Qualifiers
 /note= "Wild-type Lys substituted
 Protein;
 90.0%;
 ₽-3
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 Score 99; DB 23
Pred. No. le-07;
 Mismatches
 DB 23; Length 1475;
 Indels
 0;
 Gaps
```

0

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552 VPSYSFIRAHDSEVQDLIADII 573

```
CC changes at positions from TSSD, TSSDE, NA7LD/NSDD, and CMA7LD/TSSDE, Also included are a glucan produced by the GTF mutant, CC an isolated polymucleotide which encodes Pl or P2, or its complementary CC polymucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polymucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the expression cassette. Also conting composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating agent). The vector is useful comprising the glucan in a plant transformed with a gene encoding a comprising the glucan in a plant. The method comprises transforming a plant of produce a regenerated plant and inducing expression of the conditions to produce a regenerated plant and inducing expression of the conditions to produce a time sufficient to produce the glucan in the conditions to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. CC glucans are useful as substitutes for and additions to modified starch cC manufacture utilising the glucan produce chemical effuents, paper cc manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and conditions to modified starch but present sequence represents a GTFB mutant of the invention. The present sequence is not shown in the specification but the information in claim 36.
 07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D567T, D571K, D567T/D571K, D571K, D571K/K1014T, D571K/K1014T, T448V/D457N/D567T/D571K/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589B, N471D, N471D/T589D, and
 WPI; 2002-414332/44
 11-DEC-1998;
07-JUN-1995;
 Claim 36; Page -; 44pp; English.
 19-DEC-2000;
 14-MAR-2002
 (NICH/) NICHOLS
 2000US-0740274.
 95US-0478704.
95US-0482711.
95US-0485243.
 98US-0008172
98US-0009620
 98US-0210361
 98US-0007999
 SE.
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VPSYSFIRAHDSEVQDLIRNII 22 

Matches

l Similarity 20; Conserv

Conservative

90.0%;

; Score 99; DB ; Pred. No. 1e-0 1; Mismatches

DB 23; 1e-07;

Length 1475; Indels

0

Gaps

0;

Sequence

A

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ARUSULT 11
ARUSULT 12

The invention an isolated protein comprising a glucosyltransferase CC (GTP) B polypeptide having changes at position from 1448V, D457N, D567T, M567T, D457N/D571K, D567T,D571K, M567T,D571K, M567T,M589D, and CC (Changes at positions from T589D, M471D, M471D, M589D, and CC (M471D, M569T,D567T,D571K, M571D, M5
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
 AAU98035 standard; Protein; 1475
 Misc-difference
 Misc-difference
 Synthetic
 Streptococcus mutans
 27-AUG-2002
 AAU98035;
 19-DEC-2000;
 14-MAR-2002
 US2002031826-A1
 Glucosyltransferase B or D protein useful for producing a glucan uses substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 11-DEC-1998;
07-JUN-1995;
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44.
 (NICH/) NICHOLS
 20-JAN-1998
 16-JAN-1998;
16-JAN-1998;
 07-JUN-1995;
 07-JUN-1995;
 mutans
 glucosyltransferase
 vacuole;
 (first entry)
 2000US-0740274
 95US-0485243.
98US-0007999.
98US-0008172.
 95US-0478704
95US-0482711
 98US-0210361
 571
 457
 ß
 Location/Qualifiers
 /note= "Wild-type Asp substituted by Lys'
 note= "Wild-type Asp substituted by Asn'
 glucan; starch; latex; thermopiast paper manufacture; mutant; mutein.
 GTFB mutant D457N/D571K.
```

```
considerated plant, where the vector contains a transit sequence from correlated plant, where the vector contains a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and conthorophyll AB binding protein to produce a transgenic plant, and glucan cis produced in the amyloplast of potato or the vacuole of sugar beet. CC Glucans are useful as substitutes for and additions to modified starch cc and latexes in paper manufacture. Unlike prior art techniques, which cc and latexes in paper manufacture. Unlike prior art techniques, which cc manufacture utilising the glucan produced by GTF, which utilises conjugically produced input materials, is more correspective and conjugically priorities and impart gloss to the paper during coating step. CC wose created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
 RESULT 12
 Query Match
Best Local
 Matches
 plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of polynuclectide for a time sufficient to produce the glucan in the
 The DNA sequence from Streptococcus sobrinus strain 6715 encodes glucosyltransferase-I (and mutants). The DNA was obtd. by treating sobrinus 6715 with mutanolysin, extracting the chromosomal DNA, partially digesting with sau3AI and fractionating on agarose gel. The 3-5 kbp fragment was ligated into pUC18 and E. coli JM109 transformed with it. A GT-1 expressing clone was isolated and seguenced. The clone may be used in the development of a drug for
 Glucosyltransferease
 28-JUN-1993
 AAR32925
 AAR32925 standard; Protein; 1592
 Sequence
 Streptococcus sobrinus
 GT-1; Streptococcus; dental;
 WPI; 1993-079449/10.
N-PSDB; AAQ37760.
 JP05023188-A.
 Claim 13; Page 15; 29pp; Japanese
 deleted
 DNA sequence
 25-JUL-1991;
 02-FEB-1993
 (FUKU/) FUKUI I.
(KATO/) KATO K.
 552
 μ
 Similarity
20; Conser
 VPSYSFIRAHDSEVQDLIRNII 22
 VPSYSFIRAHDSEVQDLIAKII 573
 DNA
 1475
 Conservative
 glucosyl:transferase-I - comprises Streptococcus sequence with at least one nucleotide added or
 (first
 A
 91JP-0186592
 91JP-0186592.
 entry)
 89.1%;
 H
 Score 98; DB. Pred. No. 1.5e
 caries
 DB 2-
1.5e-07;
2;
 Length 1475;
 Indels
 by treating
 0
 growing
ion of the
 Gaps
 0;
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RESULT 13
AAU98032
ID AAU98032
XX
XX
AAU98032
AC AAU98
AC COAL
AC AAU98
AC AAU98
AC AAU98
AC CAL
AC AAU98
AC AA
 S
 밁
 8
 Query Match
Best Local S
Matches 19
Sequence
 16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
 Glucosyltransferase;
 27-AUG-2002
 AAU98032
 AAU98032 standard;
 14-MAR-2002
 Synthetic.
 US2002031826-A1
 Misc-difference
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
 Nichols
 07-JUN-1995
 07-JUN-1995;
 WPI; 2002-414332/44
 11-DEC-1998;
 19-DEC-2000;
 Claim 36; Page -; 44pp;
 paper manufacture,
 (NICH/)
 19;
 --
 Similarity
 composition;
ast; vacuole;
 SE
 VPSYSFIRAHDSEVQDLIRNII 22
 NICHOLS
 glucosyltransferase
 1592
 Conservative
 (first
 2000US-0740274
 mutans.
 98US-0210361.
95US-0478704.
95US-0482711.
 B
 98US-
 98US-0007999
 95US-0485243
 98US-0008172
 Location/Qualifiers 567
 note= "Wild-type Asp substituted"
 Protein; 1475
 comprises mutations in specific
 entry)
 89.1%;
86.4%;
 -0009620
 GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
 paper manufacture;
 English.
 Score 98; DB
Pred. No. 1.6e
2; Mismatches
 2
 GTFB mutant D567T
 JB 1.6e-07;
1;
 mutant; mutein.
 Length 1592;
 Indels
 γ̈́
 Thr"
 0
 0
```

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Ś
 RESULT 14
 밁
 Best Loc
Matches
 thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucosyltransferase B or D enzyme, wild-type or mutant and a paper comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polymuclectide for a time sufficient to produce the glucan in the regenerated plant, where the vector contains a transit sequence from ribulose biphosphate carboxylase small subunit, waxy, brittle-l and chiacons.
 chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
 11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
 Sequence
 /note= "Wild-type Asp substituted by Asn" Misc-difference 567
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 S. mutans glucosyltransferase GTFB mutant D457N/D567T
 AAU98034;
 AAU98034 standard; Protein; 1475 AA
 Streptococcus mutans
 27-AUG-2002
 14-MAR-2002
 US2002031826-AJ
 16-JAN-1998
 19-DEC-2000;
 Local
 l Similarity
19; Conserv
 VPSYSFIRAHDSEVOTLIADII 573
 VPSYSFIRAHDSEVQDLIRNII 22
 1475 AA;
 Conservative
 (first entry)
 2000US-0740274
 98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
 Location/Qualifiers
 /note= "Wild-type Asp substituted by Thr"
 83.6%;
 Score 92;
Pred. No.
 Mismatches
 1.6e-06;
 DB 23; Length 1475;
 Indels
 ٥,
 Gaps
 0
```

```
CC (GTF) B polypeptide having changes at position from 1446V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, CC D567T/D571K/K1014T, 1448V/D567T, D457N/D57TK, K709D/TK, CC D567T/D571K/K1014T, and K779Q or a GTF D polypeptide having CC M471D/T589E. Also included are a glucan produced by the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a continuous of the from the framesgenic plant comprising the promoter, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, comprising the glucan produced in a plant transformed comprises the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan producing agent). The vector is useful comprising the glucan in a plant transformed with a gene encoding a composition that the vector, growing the plant cell under plant growing plant cell under plant growing a plant cell with the vector is useful comprises to produce a regenerated plant and inducing expression of the plant cell with the vector growing the plant cell under plant growing a plucan in a plant. The method comprises transforming a growing the plant cell under plant growing the plant cell under plant, and glucan produced by the vector is useful conditions to mytoplastic carboxylase small subunit, waxy, britle-1 and conditions and plant and placen produced in the amyloplast of potato or the vacuole of sugar beet.

CC description of the produce demandature. Unlike prior art techniques, which can produced in the amyloplastic between the plant composition and impart colors of the p
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N,
 WPI; 2002-414332/44
 (NICH/) NICHOLS
 properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as and the information in claim 36.
 Page -; 44pp; English.
 ດ
 appearing as AAU98027
```

RESULT 15 AAU98036 X B X B X B X B X B 밁 S Matches Query Match Best Local S. mutans glucosyltransferase GTFB mutant D567T/D571K. AAU98036 standard; Protein; 1475 AA 27-AUG-2002 AAU98036; 552 19; Similarity VPSYSFIRAHDSEVQDLIRNII 22 (first entry) 86.4%; Score 92; DB 23; 1 Pred. No. 1.6e-06; 1; Mismatches 2; Indels 0 Gaps

Sequence

1475 AA;

83.6%;

Length 1475;

0,

```
The invention an isolated protein comprising a glucosyltransferase CC (CTF) B polypeptide having changes at position from 1448V, D457N, D567T, $1014T, D457N/D567T, D457N/D567T, D57TK, W779CXIO14T, D567T/D57TK, W779CXIO14T, CC D567T/D57TK, W1014T, A48V/D457T, D567T/D57TK, W779CXIO14T, CC P169A/X170A/X171A, and K779Q or a CTF D polypeptide having CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CTF mutant, CC (169A/X170A/X171A, and K779Q or a CTF D polypeptide having CTF mutant, CC (169A/X170A/X171A, and K779Q or a GTF D polypeptide having CTF mutant, CC (169A/X170A/X171A, and K779Q or a gluca comprision of the comprision of the comprision of the produced of the polymucleotide operably linked to a cC (169A/X170A/X171A) or their comprision comprision of the produced in the amyloplast and/or vacuole or a maize line condition of produced in the amyloplast and/or vacuole or a maize line condition of produce in the amyloplast and/or vacuole or a maize line comprision of the plucan (paper sixing/coating agent). The vector is useful comprision of the polymucleotide for a time sufficient to produce the glucan in the polymucleotide for a time sufficient to produce the glucan in the polymucleotide for a time sufficient to produce a transit sequence from the polymucleotide for a sufficient to produce a transit sequence from the polymucleotide for a sufficient to produce a transit sequence from the polymucleotide for a sufficient to produce a transit sequence from the polyment of the polymucleotide for a sufficient to produce a transit sequence from the polyment of the
 Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
 Misc-difference
 Synthetic.
 Streptococcus mutans.
 Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
 14-MAR-2002
 Misc-difference
 Claim 36; Page -; 44pp; English.
 WPI; 2002-414332/44.
 Nichols SE;
 20-JAN-1998;
 16-JAN-1998;
16-JAN-1998;
 07-JUN-1995
 07-JUN-1995
 11-DEC-1998;
07-JUN-1995;
 19-DEC-2000;
 US2002031826-A1
 (NICH/) NICHOLS
 2000US-0740274.
 98US-0210361.
95US-0478704.
 /note= "Wild-type Asp
571
 Location/Qualifiers 567
 98US-0007999.
98US-0008172.
 95US-0485243.
 98US-0009620
 95US-0482711.
 S
 /note= "Wild-type Asp substituted by Lys"
 substituted by Thr"
```

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និនិនិនិនិនិ
뮍
 δÃ
 Query Match
Best Local S
Matches 19
 properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention.

Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 was created by the indexer using the GTFB sequence appearing as AAU98027
 Sequence
 and the information in claim 36.
 552 VPSYSFIRAHDSEVQTLIAKII
 19;
 Similarity
 VPSYSFIRAHDSEVQDLIRNII 22
 1475 AA;
 Conservative
 86.4%;
 Score 91;
Pred. No.
 0
 Mismatches
 DB 23;
 .4e-06;
 Length 1475;
 Indels
 0;
 Gaps
 0
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Search completed: November 13, 2003, 09:38:28
Job time: 40.3507 secs

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Minimum DB
Maximum DB
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 Title:
Perfect score:
 Run on:
 OM protein -
 Result
No.
 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
 Total number of hits satisfying chosen parameters:
 Database
Score
).
18
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seq length: 2000000000
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 protein search, using sw model
 November 13, 2003, 09:31:40 ; Search time 13.6588 Seconds (without alignments) 154.898 Million cell updates/sec
 BLOSUM62
Gapop 10.0 , Gapext 0.5
 110
1 VPSYSFIRAHDSEVQDLIRNII 22
 US-09-290-049A-15
 283308 segs, 96168682 residues
 Match
 PIR_76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
 Length
540
414
196
597
631
767
956
1365
1835
6359
6359
202
202
282
327
 1375
1475
1592
1290
1508
1365
13449
1449
1449
1577
1431
1518
1599
 В
 T30858
A45866
A44811
S22737
G824785
OYHUCR
T06120
S70529
T10529
T39715
H81654
T12823
S46082
T31679
T34788
S47798
 IJ
 A38175
D86474
JH0511
 SUMMARIES
 283308
 hypothetical prote hypothetical prote probable transcrip hypothetical prote probable RING zinc inositol 2-dehydro
 hypothetical prote
MAD2 protein - yea
DNA polymerase III
conserved hypothet
probable transcrip
conserved hypothet
 glucosyltransferas
glucosyltransferas
glucosyltransferas
 dextransucrase (EC gtfB protein precu glucosyltransferas
 glucosyltransferas
glucosyltransferas
 probable dextransu
 dextransucrase (EC
 Description
 hypothetical prote natriuretic peptid
 glucosyltransferas
 nypothetical prote urea carboxylase (
 bacitracin synthet
 dextransucrase (EC
```

| Query Match 100.0%; Score 110; DB 2; Length 13/5; Best Local Similarity 100.0%; Pred. No. 5.2e-09; Matches 22; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Matches 22; VPSYSFIRAHDSEVQDLIRNII 22  Qy | ooluble<br>ransfer<br>d <mat></mat> | 0.08 | sequence revision signation moon—500003135 1; Kuramitsu, H.K. 1; Kuram | RESULT 1 JT0345 dextransucrase (EC 2.4.1.5) precursor - Streptococcus mutans (strain GS-5) M.Alternate names: sucrose 6-glucosyltransferase N.Alternate names: sucrose 6-glucosyltransferase C;Species: Streptococcus mutans | 30 44 40.0 570 2 B97160 hypothetical prote primosomal replica 2 A82043 40.0 734 2 A82043 primosomal replica 32 44 40.0 734 2 A82043 primosomal replica 34 40.0 1068 1 A43322 1-phosphatidylinos 34 44 40.0 1068 1 T38110 1-phosphatidylinos 35 44 40.0 1583 2 F97846 nitroreductase fam 36 43 39.1 187 2 H97184 regulatory protein 37 43 39.1 635 2 D86265 protein regulatory protein 39 43 39.1 635 2 D86265 hypothetical prote 39 43 39.1 635 2 D86265 hypothetical prote 39 43 39.1 635 2 D86265 hypothetical protein 40 40 39.1 1260 2 S48390 r518 5 protein F14D16.3 [42 42 38.2 108 2 S75540 hypothetical protein 42 42 38.2 108 2 S75540 hypothetical protein 42 38.2 225 2 S369098 SRD1 protein - year 42 38.2 225 2 S369098 SRD1 protein - year 42 38.2 508 2 T50180 nucleolar protein |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| •                                                                                                                                                                                                        | TE GINCANA                          |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

RESULT 2
B33135
gtfB protein precursor - Streptococcus mutans
gtfB protein precursor - Streptococcus mutans
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C;Apate: 23-Oct-1990 #sequence\_revision 23-Oct-1990 #text\_change 15-Oct-1999
C;Accession: B3315; A33128
C;Accession: B3315; A33128
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.

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A; Experimental source: strain GS-5
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A;Molecule type: DNA
A;Residues: 1-1592 <ABO>
A;Cross-references: GB:D90213; NID:g217032; PI
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F;1093-1112/Domain: cpl repeat homology <CP2>
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F;1513-1532/Domain: cpl repeat homology <CP6>
CP7>
F;1513-1532/Domain: cpl repeat homology <CP8>
 J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene from Streptococcus mutans.
A;Reference number: A33135; MUID:87308013; PMID:3040685
 A;Reference number: A33128
A;Accession: A33128
A;Status: preliminary; not compared with conceptual translation
 A;Accession: B33135
 A; Molecule type: DNA
A; Residues: 1-171, 173
 A; Molecule type: DNA
A; Residues: 1-1475 <SHI>
 A; Status: preliminary
 u. Bacteriol. 173, 989-996, 1991
A;Title: Peptide sequences for sucrose splitting and glucan binding within Streptococcus A;Reference number: A38175; MUID:91123227; PMID:1704006
A;Acession: A38175
 glucosyltransferase precursor - Streptococcus sobrinus
C;Species: Streptococcus sobrinus
C;Date: 28-Aug-1992 #sequence_revision 28-Aug-1992 #text_change 15-Oct-1999
C;Accession: A38175
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 S
 submitted to the Protein Sequence Database,
 R;Shiroza,
 A38175
 000
 RESULT
JC5473
R; Monchois,
 dextransucrase
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 Cross-references: GB:M17361; NID:g153639; PIDN:AAA88588.1; PID:g153640.shiroza, T.; Ueda, S.; Kuramitsu, H.K.
 Matches
 Query Match
Best Local
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;Species: Leuconostoc mesenteroides
;Date: 07-Jul_1997 #sequence_revision 29-Aug-1997 #text_change 29-Aug-1997
 Status: preliminary
 :Accession:
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 Similarity
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 VPSYSFIRAHDSEVODLIRNII 22
 VPSYSFARAHDSEVODITRDII 569
 DNA
 Willemot,
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 90.0%;
 89.1%;
 R.M.,
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homology <CP5>
homology <CP5>
homology <CP6>
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homology <CP7>
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 homology
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 Score 99; DB 2;
pred. No. 3.2e-07
1; Mismatches
 2;
 Score 98; DB 2;
Pred. No. 5.1e-07
 Mismatches
 <CP1 > <CP1 > <CP2 > <CP3 > <CP4 > <CP5 > <
 September
 PIDN:BAA14241.1; PID:d1014946;
 DB 2;
 2
 M.; Croux, C.; Monsan,
 Length 1475;
 Length 1592;
 1990
 0;
 0
 Gaps
 PID:g217033
 0
 0
 Ś
 A;Gene:
 占
 A;Gene: :
C;Superfa
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 A; Molecule type: DNA
A; Residues: 1-1365 <GIL>
A; Cross-references: GB:M30943;
 ;Gene: gtfS;Superfamily:
 Genetics:
```

```
C;Keywords: glycosyltransferase; hexosyltransferase F;78-870/Domain: catalytic #status predicted <CAT> F;922-1290/Domain: glucan-binding #status predicted
 A; Residues: 1-1290 < MON >
A; Cross-references: GB: U38181
 A; Reference number: JC5473; A; Accession: JC5473
 A; Title: Cloning and sequencing of a gene (A; Reference number: JC5473; MUID:97136686;
 RESULT 5
 R;Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, FEMS Microbiol. Lett. 159, 307-315, 1998
A;Title: Cloning and sequencing of a gene coding for an A;Reference number: 220981; MUID:98164374; PMID:9503626
 C;Species: Leuconostoc mesenteroides
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 11-May-2000
C;Accession: T31098
 probable dextransucrase (EC 2.4.1.5), extracellular - Leuconostoc mesenteroides C_1Species: Leuconostoc mesenteroides
 C; Comment: This enzyme catalyzes
 A; Molecule type: DNA
 A;Status: nucleic
 A,Residues: 1-1508 <MON's APO30129; NID:g2766611; PID:g2766612; PIDN:AAB95453.1 A;Experimental source: strain NRRL B-1299 C;Genetics:
 A;Description:
C;Keywords: gl:
 A;Status: preliminary; translated A;Molecule type: DNA
 glucosyltransferase (RC 2.4.1.-) gtfS precursor - Streptococcus sobrinus C;Species: Streptococcus sobrinus C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change 15-Oct-19 C;Accession: A41483
 C; Function:
 A; Gene:
 A; Accession: T31098
 Infect. Immun. 58, 2452-2458, 1990 A; Title: Analysis of the Streptoco
 A; Title: Analysis of the Streptococcus downei gtfS gene, A; Reference number: A41483; MUID:90316665; PMID:2142479
 R; Gilmore, K.S.; Russell,
 A41483
 ;Genetics:
A; Accession: A41483
 Query Match
Best Local S
 Matches
 Matches
 Query Match
 dsrA
 Local Similarity
 23-32,
 388
 634 IPNYSTVRAHDSEVOTVIAQII 655
 N
 16;
 on: produces dextran composed only of alpha(1-6) glycosyltransferase; hexosyltransferase
 15;
 Similarity
 PNYSFIRAHDSEVOTIIADII 408
 PSYSFIRAHDSEVQDLIRNII 22
 VPSYSFIRAHDSEVQDLIRNII 22
 Conservative
 acid sequence not shown; translation not shown
 Conservative
 75.5%;
 75.5%;
 R.R.B.; Ferretti,
 the transfer of D-glucopyranosyl units
 ω
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 Score 83;
Pred. No.
 Score 83; DB 2;
Pred. No. 0.00012;
4; Mismatches
 from GB/EMBL/DDBJ
 Mismatches
 coding for a novel dextransucrase from Leucono, PMID:8982063
 DB 2;
 .8e-05;
 Length 1290;
 Length
 Indels
 Indels
 extracellular dextransucrase (DS
 ₩
3
 which
 glucosidic bonds
 specifies a glucosyltrans
 15-Oct-1999
 0,
 0
 Gaps
 from
 0
 sucrose ont
 0,
```

ly: cpl repeat homolo
glycosyltransferase;

YEOTOMOT

hexosyltransferase

NID: g153652;

PIDN:AAA26898.1;

PID:g153653

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k;Simpson, C.L.; Giffard, P.M.; Jacques, N.A.
Infect. Immun. 63, 609-621, 1995
A;Title: Streptococcus salivarius ATCC 25975 possesses at
A;Reference number: Z20909; MUID:95122197; PMID:7822030
A;Accession: T30857
 glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 C;Accession: T30857
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 A;Status: preliminary; translated from GB/EMBI/DDBJA;Molecule type: DNA_____
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 glucosyltransferase N - Streptococcus salivarius (fragment)
C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999
C;Accession: T30552
 A;Residues: 1-1449 <SIM>
A;Cross-references: EMBL
 RESULT 9
 R;Jaffe, R.I. submitted to the EMBL Data Library, February 1998 nearrintion: Streptococcus salivarius V1477 gtf.
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 A; Description: Streptococcus
A; Reference number: Z20854
 A;Gene:
 glucosyltransferase - Streptococcus salivarius
C;Species: Streptococcus salivarius
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-
 A; Molecule type: DNA
A; Residues: 1-1449 < JAF>
 A;Status: preliminary; translated from GB/EMBL/DDBJ
R;Simpson, C.L.; Giffard, P.M.; Jacques, N.A.
Infect. Immun. 63, 609-621, 1995
A;Title: Streptococcus salivarius ATCC 25975
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 A; Cross-references: EMBL: AF049609;
 A; Accession: T30552
 C; Accession:
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 3 SYSFIRAHDSEVODLIRNII 22
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 VPSYSFIRAHDSEVQDLIRNII
 VPNYVFIRAHDSEVOTRIAKII 558
 Similarity
 T30858
 SYSFIRAHDSEVODLIRNII 22
 NYAFVRAHDSEVOSIIGQII 628
 Conservative
 Conservative
 Conservative
 EMBL:L35495; NID:g662378; PID:g662379; PIDN:AAC41412
 69.1%;
72.7%;
 64.5%;
 65.0%;
 _revision 22-Oct-1999
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 4:
 Score 76; D
Pred. No. 0.
 Score 71;
Pred. No.
 4
 Score 71; DB
Pred. No. 0.00
4; Mismatches
 NID: g2935545; PID: g2935546; PIDN: AAC05156.1
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 .0014;
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 DB 2;
.0093;
 #text_change 22-Oct-1999
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 Length 1449;
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A; Molecule type: DNA
A; Residues: 1-1577 <
 A;Accession: T30858
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 dextransucrase (BC 2.4.1.5) precursor - Streptococcus mutans C;Species: Streptococcus mutans C;Date: 30-Sep-1993 #sequence_revision 30-Sep-1993 #text_change 07-May-1999 C;Accession: A45866
 밁
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 A;Gene: gtfm
 A;Cross-references:
 R;Honda, O.; Kato, C.; Kuramitsu, H.K.
J. Gen. Microbiol. 136, 2099-2105, 1990
A;Title: Nucleotide sequence of the Streptococcus mutans gtfD gene encoding the glucosyll
A;Reference number: A45866; MUID:91100958; PMID:2148600
 glucosyltransferase (EC 2.4.1.-) I - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 31-Dec-1993 #sequence revision 31-Dec-1993 #text_change 1 C;Accession: A44811; S22726; S28809 R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. J. Gen. Microbiol. 137, 2577-2593, 1991 A;Fitle: Molecular characterization of a cluster of at least two A;Reference number: A44811; MUID:92148377; PMID:1838391
 F;1127-1146/Domain: cpl repeat homology <CP2>
F;1192-1211/Domain: cpl repeat homology <CP3>
F;1257-1276/Domain: cpl repeat homology <CP4>
F;1257-1279/Domain: cpl repeat homology <CP5>
F;1277-1297/Domain: cpl repeat homology <CP5>
F;1321-1340/Domain: cpl repeat homology <CP8>
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F;1341-1361/Domain: cpl repeat homology <CP7>
 A;Cross-references: GB:M29296
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexos
C;Keywords: glycosyltransferase; hexos
F;181-201/Domain: cpl repeat homology
 A; Molecule type: DNA
A; Residues: 1-1431 <HON>
 A;Status: preliminary
 A;Accession: A45866
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A;Gene: gtfJ
c;Superfamily: cpl repeat homology
c;Superfamily: cpl repeat homology
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 hexosyltransferase
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 Score 68; DB 2;
Pred. No. 0.028;
2; Mismatches
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 Length
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 Length 1431;
 Indels
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 15-Oct-1999
 0;
 glucosyltransferase
 Gaps
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VPSYSFIRAHDSEVQDLIRNII

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glucosyltransferase (EC 2.4.1.-)
C;Species: Streptococcus salivari
C;Date: 16-Sen-100
 RESULT 12
S22737
 C;Species: Streptococcus salivarius (;Pate: 16-Sep-1992 #sequence revision 16-Sep-1992 (;Pate: 16-Sep-1992 #sequence revision 16-Sep-1992 (;Pate: 16-Sep-1992 #sequence revision 16-Sep-1992 R;Jacques, N. R;Jacques, N. Submitted to the EMBL Data Library, March 1992 submitted to the EMBL Data Library, March 1992
 A;Experimental source: ATCC 25975

R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
J, Gen. Microbiol. 137, 2577-2593, 1991
J, Title: Molecular characterization of a cluster of at least two glucosyltransferase gen A;Reference number: A44811; MUID:92148377; PMID:1838391
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A; Molecule type: DN
A; Residues: 1-1599
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C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 02-Feb-2001
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R;Heidelberg, J.F.; Bisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J.
chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, 1., R.R.; Mekkalanos, J.J.; Venter, J.C.; Fraser, C.M.
1, R.R.; Mekkalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
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 A,Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae. A;Reference number: A82035; MUID:20406833; PMID:10952301 A;Accession: G82455
 A; Cross-references: GB:AE004379;
A; Experimental source: serogroup
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Similarity 65.0%;
Similarity
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 NYVFIRAHDNNVODITAETI 623
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 TYLFVRAHDSEVOTVÍADII 593
 SYSFIRAHDSEVODLIRNII 22
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54.5%;
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 22
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 - Vibrio cholerae (strain N16961 serogroup O1)
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 Length 1518;
 Length 1599;
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 Length 51;
 Indels
 Indels
 0;
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 Gaps
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 A;Reference number: Z15485
 R; Bevan, M.; Hilbert, H.; submitted to the Protein S
 A; Accession: T06120
 A; Molecule type:
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Biochem. Biophys. Res. Commun. 171, 796-803, 1990
A;Title: Isolation and functional expression of the human atrial natriuretic peptide cle
A;Title: A5896; MUID:90386656; PMID:2169733
A;Reference number: A35896; MUID:90386656; PMID:2169733
A;Residues: A35896
A;Accession: A35896
A;Accession: A35896
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A;Residues: A175, GGY,477-540 <POR>
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A;Note: alternative splice form C5
R;Stults, J.T.; O'Connell, K.L.; Garcia, C.; Wong, S.; Engel, A.M.; Garbers, D.L.; Lowe, B;Ochemistry 33, 11372-11381, 1994
Biochemistry 33, 11372-11381, 1994
A;Reference number: A55870; MUID:95244450; PMID:7727388
A;Reference number: A55870; MUID:95244450; PMID:7727388
A;Consents: annexation.
 R;Lowe, D.G.; Camerato, T.R.; Goeddel, D.V.
Nucleic Acids Res. 18, 3412, 1990
A;Title: cDNA sequence of the human atrial natriuretic peptide
A;Reference number: S10150; MUID:90287735; PMID:2162522
 C;Date: 09-Nov-1990 #sequence_revision 05-May-1995 #text_change 22-Jun-1999 C;Accession: S10150; A35896
 A;Cross-references: EMBL:X52282; NID:g28705; PIDN:CAA36523.1; PID:g28706
A;Note: alternative splice form C6
R;Porter, J.G.; Arfsten, A.; Fuller, F.; Miller, J.A.; Gregory, L.C.; Leter and Control of the Control of th
 natriuretic
 A;Map position: 5914-5913
A;Map position: 5914-5913
C;Superfamily: natriuretic peptide receptor C; natriuretic peptide-bindir C;Superfamily: natriuretic peptide receptor C; Newywords: alternative splicing; glycoprotein; homodimer; hormone recept C;Keywords: alternative splicing; glycoprotein condimer; hormone recept c;A4-45/Domain: signal sequence #status predicted <SIG>F;1-23/Domain: propeptide #status experimental <PRO>F;46-540/Product: natriuretic peptide receptor C #status predicted <MAT>F;46-479/Domain: extracellular #status predicted <EXT>F;131-462/Domain: natriuretic peptide-binding domain homology <NPB>F;131-462/Domain: transmembrane #status predicted <TMM>F;483-503/Domain: transmembrane #status predicted <TMM>F;483-503/Domain: transmembrane #status predicted <TMM>F;483-503/Domain: transmembrane #status experimental F;86,293/Binding site: carbohydrate (Asn) (covalent) #status experimental F;394/Binding site: carbohydrate (Asn) (covalent) (partial) #status experimental F;
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 N;Alternate names: atrial
 A; Accession: S10150
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 A; Molecule type: mRNA
 A;Cross-references: GDB:125201; OMIM:108962
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A; Gene: GDB: NPR3; NPRC; ANPRC
 A;Contents: annotation; propeptide, disulfide bonds, carbohydrate binding
 hypothetical protein F23E12.70 - Arabidopsis thaliana ()Species: Arabidopsis thaliana (mouse-ear cress) C;Bate: 30-Apr-1999 #sequence_revision 30-Apr-1999 #te C;Accession: T06120
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 RESULT 15
 Matches
 Query Match
 Local
 15
 peptide receptor C precursor - human names: atrial natriuretic peptide cle
 8; Conserva
 VPAYSAIR--NSEIRDLEKEII 34
 YSFDETKOLDLEDIVRNI
 YSFIRAHDSEVQDLIRNI
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 #sequence_revision 30-Apr-1999 #text_change 22-Oct-1999
 43.6%;
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M.; Holzer, E.; Brandt, A.;
e Database, April 1999
 251
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Pred. No.
 Mismatches
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 DB
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 t) (partial) #status experimental form C6) #status experimental
 Length 540;
 peptide-binding hormone receptor
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A;Cross-references: EMBL:AL022604; GSPDB:GN00062; ATSP:F23E12.70
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Search completed: November 13, 2003, 09:50:28
Job time: 13.6588 secs

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Maximum Match 100%
Listing first 45 summaries
 Database :
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pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
 Score
 protein search, using
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130.561 Million cell updates/sec
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4 bacillus su
8 methanopyru
0 fowlpox vir
0 saccharomyc
0 homo sapien
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2 buchnera ap
4 schizosacch
9 saccharomyc
 bacillus su
saccharomyc
bos taurus
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) rhodobacter
5 escherichia
 mycoplasma
azotobacter
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caenorhabdi
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| 659<br>826<br>875<br>904<br>1006<br>2542<br>63<br>183<br>183<br>201<br>. 96                                                                                                                                                                                             |
| 444444444                                                                                                                                                                                                                                                               |
| RNB HAEIN TLR4 PAPAN ENV BIV06 ENV BIV07 K125 TOBAC TIN2 HUMAN V7K BYDVP RETB BOVIN RETB PIG IBBA PEA IBB2 PEA IBB2 PEA ADEN_ADEG8                                                                                                                                      |
| p44440 haemophilus Q9tsp2 papio anubi p19556 bovine immu p19557 bovine immu p19557 bovine immu c21826 nicotiana t Q974g6 homo sapien p09517 barley yell p18902 bos taurus p19485 sus scrofa Q41065 pisum sativ Q41066 pisum sativ Q41066 pisum sativ Q41067 avian adeno |

## ALIGNMENTS

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| SEQUENCE OF 1-349 FROM N.A.  STRAIN=GS-5; MEDLINE=B7308013; PubMed=3040685; MEDLINE=B7308013; PubMed=3040685; MEDLINE=B7308013; PubMed=3040685; Shiroza T., Ueda S., Kuramitsu H.K.; "Sequence analysis of the giff gene from Streptococcus mutans."; "Sequence analysis of the giff gene from Streptococcus mutans."; "Sequence analysis of the giff gene from Streptococcus mutans."; "Sequence analysis of the giff gene from Streptococcus mutans."; "Sequence analysis of the giff gene from Streptococcus mutans."; "Sequence analysis of EXTRACELIVAR GLUCANS, THAT ARE THOUGHT -!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT -!- CATALYTIC ACTIVITY: Sucrose + [(1,6)-alpha-D-glucosyl](N) = D!- CATALYTIC ACTIVITY: Sucrose + [(1,6)-alpha-D-glucosyl](N) = D!- SUBCELLULAR LOCATION: Secreted!- DISEASE: DENTAL CARIES. | SEQUENCE FROM N.A.  SEQUENCE FROM N.A.  SEQUENCE FROM N.A.  STRAIN=MT4239 / Serotype C, MT4245 / Serotype E, MT4251 / Serotype F, MT4467 / Serotype E, and MT8148 / Serotype C; MT4467 / Serotype E, and MT8148 / Serotype C; MT4467 / Serotype E, And MT8148 / Serotype C; MT4251 / Serotype C; MT4251 / Serotype C; MT4251 / Serotype S., Mimura S., Hamada S.; "Molecular analyses of glucosyltransferase genes among strains of Streptococcus mutans."; Serotype C; SEROTE FROM N.A.  SEQUENCE FROM N.A.  SEQUENCE FROM N.A.  STRAIN=UA159 / ATCC 700610 / Serotype C; MEDLINE=22295063; PubMed=12397186; MEDLINE=2005063; | TRMU TIRMU TIRMU TISATO, 06938 1NOV-1988 18-FEB-2003  |

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EMBL, M22054; AAA88592.1; -.
EMBL; D88652; BAA26102.1; -.
EMBL; D88655; BAA26100.1; -.
EMBL; D88655; BAA26110.1; -.
EMBL; D88651; BAA26114.1; -.
EMBL; D88661; BAA26120.1; -.
EMBL; D89978; BAA26120.1; -.
EMBL; D89978; BAA36120.1; -.
EMBL; AE014940; AAA8989.1; -.
EMBL; M17361; AAA89899.1; -.
 between
 This
 Complete
SIGNAL
CHAIN
DOMAIN
 InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW_binding_I; 1.
Pfam; PF02324; Glyco_hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental caries;
 entities requires a license agreement (Se or send an email to license@isb-sib.ch).
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 WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GIF-SL
FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOM
BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 5 cell wall binding repeats.
 MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE), GTF-SI SYNTHESIZES BY
 SWISS-PROT entry is copyright. It is produced through a ceen the Swiss Institute of Bioinformatics and the EMBL
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727
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1331
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425
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 600
 GLUCOSYLTRANSFERASE-SI.
CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
2.4 A, 1 C AND 1 AC REPEATS.
A REPEAT.
A REPEAT.
C REPEAT.
C REPEAT.
C REPEAT.
AC REPEAT (IN STRAIN GS-5).
V -> V (IN STRAIN MT4239).
D -> V (IN STRAIN MT4239).
D -> V (IN STRAIN GS-5).
D -> V (IN STRAIN GS-5).
D -> C (IN STRAIN GS-5).
D -> C (IN STRAIN GS-5).
 S -> A (I
A -> T (I
SR -> PX
MT4467).
A -> V (I
R -> V (I
R -> X (II
Y -> F (II
Y -> D (I
 AND MT8148)
R -> K (IN
AND MT8148)
A -> T (IN
M -> T (IN
T -> V (IN
A -> Y (I
 V -> I (
DGH -> N
MT8148).
MISSING
I -> V (
T -> A (
 UNA
UNA
 V (IN STRAINS GS-5 AND MT4467).

N (IN STRAIN MT4251).

N (IN STRAINS MT4245 AND MT4251).

K (IN STRAINS MT4245 AND MT4251).

K (IN STRAINS MT4245 AND MT4251).

D (IN STRAINS MT4245, MT4251, MT4251).
 H -> NGY
 T (INCOMPLETE).
(IN STRAIN GS-5).
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 TIFE STRMU STANDARD; PRT; 1476 AA.
P08987; O69381; O69384; O69387; O69390; O69396;
01-NOV-1988 (Rel. 09, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5) (G;
(Sucrose 6-glucosyltransferase).
 STRMU
 Shiroza T., Ueda S., Kuramitsu H.K.; "Sequence analysis of the gtfB gene J. Bacteriol. 169:4263-4270(1987)
 NCBI_TaxID=1309;
 GTFB OR SMU.1004.
 SEQUENCE FROM N.A.
STRAIN-MT4239 / Serotype C, MT4245
MT4467 / Serotype E, and MT8148 / SMEDLINE-98231643; PubMed=9570124;
 STRAIN-GS-5
 Streptococcus
 Bacteria; Firmicutes;
 Streptococcus mutans
 SEQUENCE FROM N.A.
STRAIN=UA159 / ATCC 700610 / Serotype C;
MEDIJIN=22295063; PubMed=12397186;
MEDIJIN=22295063; PubMed=12397186;
 Streptococcus mutans."; FEMS Microbiol. Lett. 161:331-336(1998)
 Fujiwara T., Terao Y., Hoshino T., Kawabata
Kimura S., Hamada S.;
Wholecular analyses of glucosyltransferase
 MEDLINE=87308013;
 SEQUENCE FROM N.A.
 Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002).

Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002).

Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002).

Proc. Natl. Acad. Sci. U.S.A. 99:14434-14439(2008).

THAT ARE THOUGHT

OF PLAY A KEY FOLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE

OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

OF CATALYTIC ACTIVITY: SUCCOSE + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

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 Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J., Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S., Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti T. S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti T. Genome sequence of Streptococcus mutans UA159, a cariogenic companies of the companies of the control of the companies of the control of the companies of the control of the cont
 578
 1 VPSYSFIRAHDSEVQDLIRNII
 Similarity
 VPSYSFIRAHDSEVQDLIRNII
 1455
 1398
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 Conservative
 AA;
 1398
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1455
 PubMed=3040685;
 162965
 100.
 Lactobacillales;
 V -> I (IN STRAIN MT8148).
D -> N (IN STRAIN MT4239):
V -> I (IN STRAIN MT4239 AND MT8148).
V -> P (IN STRAIN MT8148).
S -> P (IN STRAIN MT8148).
GRLYFKSNGVOAKGELITERKGRIKYYDDNSGNEVRNYVR GRDYKSNGVOAKGELITERKGRIKYYDDNSGNEVRNYVRASHD TSSGNWYYFGNDGYALIGMHVVEGRRVYEDNGYRYASHD TSSGNWYYFGNDGYALIGMHVVEGRRWYFDNFERF -> ORNHWYNYYRRUDGRGSSSAVRFEHSRNGFFDNFERF -> HASILSLMVFRLRESSLQSVKVVSNTMILIPEMKFVIVM (IN REF. 1).
 MW;
 0;
 Score 110; DB 1;
Pred. No. 2.6e-09;
 599
 22
 Mismatches
 3CB455A99A4FEC86 CRC64;
 5 / Serotype
Serotype C;
 Kawabata S.,
 from
 Streptococcaceae;
 Streptococcus
 genes
 (GTF-I) (Dextransucrase)
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 Length 1455;
 Ooshima T., Sobue
 MT4251
 among strains of
 Indels
 mutans.";
 Serotype
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 Gaps
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EMBL; M17361; AAA88588.1; -.
EMBL; D88654; BAA26105.1; -.
EMBL; D88654; BAA26105.1; -.
EMBL; D88657; BAA26109.1; -.
EMBL; D88650; BAA26113.1; -.
EMBL; D89670; BAA26113.1; -.
EMBL; D89977; BAA26119.1; -.
EMBL; AB014940; AANS8705.1; -.
EMBL; AB014940; AANS8705.1; -.
EMBL; AB014940; AANS8705.1; -.
EMBL; AB014940; AB018705.1; -.
EMBL; AB014940; AB018705.1; -.
Pfam; PF01473; CM binding 1; 1
Pfam; PF02324; Glyco hydro 70; 1.
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 use by non-profit institutions as long modified and this statement is not removed. entities requires a license agreement (See or send an email to license@isb-sib.ch).
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 SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 10 cell wall binding repeats.
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 SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
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 1329
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474
512
519
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 S -> T (IN STRAIN MT4239)
T -> I (IN STRAIN GS-5).
V -> A (IN STRAIN GS-5, N.
MT4467 AND MT8148).
Q -> P (IN STRAIN MT4251).
I -> S (IN STRAIN MT4251).
MT4467 AND MT8148).
S -> F (IN STRAIN S GS-5, MT4.
MT4467 AND MT8148).
S -> F (IN STRAIN ""
K -> N (IN """
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 POTENTIAL.
GLUCOSYLTRANSFERASE-I.
CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
 AND MT4467)
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01-JUL-1989 (Rel. 11, Created)
01-JUL-1989 (Rel. 11, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
 GTF1
 VARIANT
 VARIANT
 STRDO
 MEDLINE=87308014; PubMed=3040686;
Ferretti J.J., Gilpin M.L., Russell R.R.B.;
"Nucleotide sequence of a glucosyltransferase
 Bacteria; Firmicutes;
 Streptococcus downei
 STRAIN-MFE28;
 SEQUENCE
 NCBI_TaxID=1317;

 sobrinus MFe28."
 (Sucrose 6-glucosyltransferase)
 use by non-profit institutions as long as modified and this statement is not removed. U entities requires a license agreement (See htt or send an email to license@isb-sib.ch).
 InterPro; IPR002479; CW_binding
InterPro; IPR003318; Glyco_hydro_'
Pfam; PF01473; CW_binding_I; 16.
Pfam; PF02324; Glyco_hydro_70; 1
Transferase; Glycosyltransferase;
SIGNAL 1
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 EMBL; M17391; AAC63063.1;
 BACTERIOI. 169:4271-4278(1987).

BACTERIOI. 169:4271-4278(1987).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT FOR PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
 AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CAPALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) =
fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLIAR LOCATION: Secreted.

DISEASE: DENTAL CARIES.

MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALMSCELLANEOUS: GTF-I SYNTHESIZES)

MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALMSCELLANEOUS: GTF-I SYNTHESIZES)
 BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 19 cell wall binding repeats.
 FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
 MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE (
1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI
 STRDO
 <u>د ر</u>
 Similarity
 VPSYSFIRAHDSEVQDLIRNII 22
 VPSYSFIRAHDSEVQDLIRDII 573
 FROM N.A.
 1310
1476
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A; 165846
 95.5%;
 (Streptococcus sobrinus).
: Lactobacillales; Streptococcaceae;
 AND MT8148).
S -> G (IN STRAINS
AND MT8148).
Y -> H (IN STRAIN M
Y -> A (IN REF. 1).
 MW.
 ADQDVRVAASTAPSTDGK -> (IN REF. 1).
H -> L (IN REF. 1).
MW; 9C6E09F731B4CBCF (
 Score 105; DB 1;
Pred. No. 1.6e-08;
 PRT;
 ase; Signal; Repeat; Dental caries.
POTENTIAL.
 Mismatches
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 01-AUG-1992 (Rel. 23, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5) (GTF-I) (De.
(Sucrose 6-glucosyltransferase)
Streptococcus downei (Streptococcus sobrinus)
Bacteria, Firmicutes; Lactobacillales; Streptococcaceae;
 01-AUG-1992
01-AUG-1992
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 -!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOU TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE B TO PINEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE TH AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
-!- CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = fructose + {(1,6)-alpha-D-glucosyl}(N+1).
-!- SUBCELLULAR LOCATION: Secreted.
 SEQUENCE
 "Peptide sequences for sucrose splitting and glucan binding within Streptococcus sobrinus glucosyltransferase (water-insoluble glucan synthetase).";
 SEQUENCE FROM
STRAIN=6715 /
 NCBI_TaxID=1317;
 Streptococcus
 01-AUG-1992 (Rel. 23,
01-AUG-1992 (Rel. 23,
15-SEP-2003 (Rel. 42,
 MEDLINE=91123227;
 Abo H
 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way use by non-profit institutions as long as its content is no commercial modified and this statement is not removed. Usage by and for commercial
 entities requires a license agreement (S. or send an email to license@isb-sib.ch).
 BINDING PROTEIN FROM S.MUTANS.
 EMBL; D90213; BAA14241.1;
 MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6-LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH
 SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.
 DISEASE: DENTAL CARIES.
 STRDO
 FORMS OF GLUCANS.
 1 VPSYSFIRAHDSEVQDLIRNII 22
 20;
 Similarity
 Matsumura T., Kodama
 VPSYSFARAHDSEVODLIRDII 575
 1099
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 Conservative
 N.A.
Serotype G;
1227; PubMed=1704006;
rodama T.,
 AΑ;
 STANDARD;
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AC REPEAT.
AC REPEAT.
B REPEAT.
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B REPEAT.
A REPEAT (INCOMPLETE).
O MW; B9E86A200868798E C
 CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE)
 A REPEAT
 GLUCOSYLTRANSFERASE-I
 Pred. No. 1.16.; Mismatches
 Score 100;
 .25 A,
 Ohta H.,
 1592
 N
 В,
 1.1e-07;
 (See http://www.isb-sib.ch/announce/
 DB 1;
 AND
 Fukui
 (GTF-I) (Dextransucrase)
 v
 Length 1597;
 AC REPEATS
 ×.
 Indels
 CRC64;
 Kato K.,
 TO A GLUCAN-
 0
 THOUGHT
 HE
 Gaps
 BECAUSE
 0;
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InterPro;

EMBL; M30943;

AAA26898.1;

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RESULT
GTFS_ST
 Query Match
Best Local S
Matches 19
 REPEAT
REPEAT
 DOMAIN
REPEAT
 CHAIN
DOMAIN
 InterPro; IPR003318; Glyco_hydro_70.
pfam; pr001473; CW_binding_T; 13.
pfam; pr001473; CW_binding_T; 13.
pfam; pr00324; Glyco_hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental caries.
 SEQUENCE
 DOMAIN
 SIGNAL
 P29336;
p1-DEC-1992 (Rel. 24, Created)
p1-DEC-1992 (Rel. 24, Last sequence update)
p1-DEC-1992 (Rel. 24, Last annotation update)
p1-EB-2003 (Rel. 41, Last annotation update)
p1-EB-2003 (Rel. 24, Created)
 REPEAT
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 REPEAT
 REPEAT
 GTFS
 STRDO
 Gilmore K.S., Russell R.R., Ferretti J.J.;

"Analysis of the Streptococcus downei gtfs gene, which specifies a glucosyltransferase that synthesizes soluble glucans.";

glucosyltransferase that synthesizes soluble glucans.";

Infect. Immun. 58:2452-2458(1990).

Infect. Immun. 58:245
 Streptococcus
 Bacteria; Firmicutes;
 MEDLINE=90316665; PubMed=2142479;
 SEQUENCE FROM N.A.
 NCBI_TaxID=1317;
 Streptococcus
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 1,6-GLUCOSE).

1,6-GLUCOSE).

1- SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME
BINDING PROTEIN FROM S.MUTANS.

1- SIMILARITY: Contains 10 cell wall binding repeats.
 -!- DISEASE: DENTAL CARIES
 _ຫ
 entities requires a license agreement (S or send an email to license@isb-sib.ch).
 -!- MISCELLANEOUS: GTF-S
 modified
 548
 STRDO
 19;
 Similarity
 VPSYSFARAHDSEVODITRDII 569
 VPSYSFIRAHDSEVQDLIRNII 22
 non-profit institutions as long and this statement is not removed.
 1093
1093
1093
1158
1158
1222
1287
1402
1514
1577
 Conservative
 downei
 Russell R.R., Ferretti J.J.;
 STANDARD;
 AA;
 1592
1044
1592
1592
1142
1142
1207
1272
 1451
1563
 89.1%;
 176167
 (Streptococcus sobrinus).; Lactobacillales; Streptococcaceae;
 GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-
 SYNTHESIZES WATER-SOLUBLE GLUCANS
 WW;
 2
 Score 98;
Pred. No.
 765400
 CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
 GLUCOSYLTRANSFERASE-I
 POTENTIAL.
 PRT;
 .5 X TANDEM REPEATS
 (INCOMPLETE).
 Mismatches
 BC0A66D079351ECF
 1365
 (APPROXIMATE)
 2.3e-07;
 (See
 DB 1;
 B
 . Usage by and for commercial http://www.isb-sib.ch/announce/
 (GTF-S) (Dextransucrase)
 Length 1592;
 Indels
 CRC64;
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Query Match Best Local S Matches 16

16;

RESULT 6
GTFD\_STRMU

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01-FEB-1996 (Rel. 33, Created)
28-FEB-2003 (Rel. 41, Last sequence up
15-SEP-2003 (Rel. 42, Last annotation
Glucosyltransferase-S precursor (EC 2.
(Sucrose 6-glucosyltransferase).
GTFD OR SMU-910.
 GTFD_STRMU S
P49331; O69383;
01-FEB-1996 (Rel
 InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 8.
Pfam; PF02324; Glyco_hydro_70; 1.
 MEDIINE=91100958; PubMed=2148600;
Honda O., Kato C., Kuramitsu H.K.;
"Nucleotide sequence of the Streptococcus
the glucosyltransferase-S enzyme.";
J. Gen. Microbiol. 136:2099-2105(1990).
 NCBI_TaxID=1309;
 Streptococcus mutans.
 STRAIN-UALS9 / ATCC 700610 / Serotype C;
MEDLINE-22295063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Gerretti
"Genome sequence of Streptococcus mutans UA159, a cariogenic o
 STRAIN-MT4239 / Serotype C, MT4245
MT4467 / Serotype E, and MT8148 / S
MEDLINE-98231643; PubMed-9570124;
Fujiwara T., Terao Y., Hoshino T.,
 Streptococcus
 Bacteria; Firmicutes;
pathogen.";
proc. Natl. Acad. Sci. U.S.A. 99:14434-14439(2002).
-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT
-i- FUNCTION: ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE
TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE
 Kimura S., Hamada S.;
"Molecular analyses of glucosyltransferase
Streptococcus mutans.";
 SEQUENCE FROM N.A.
STRAIN=MT4239 / Se
 SEQUENCE FROM N.A.
 SEQUENCE FROM
 Microbiol, Lett. 161:331-336(1998)
 Similarity
 VPNYVFIRAHDSEVOTRIAKII
 VPSYSFIRAHDSEVQDLIRNII 22
 157
178
198
1062
1063
1150
1170
1170
1225
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1231
1331
 Conservative
 Glycosyltransferase;
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 PRT; 1462
069386; 069389; 069392; 0
1.33, Created)
 STANDARD;
 AA;
 177
197
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1102
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1190
1243
1308
 1352
 69 18;
72.78;
 151590
 Lactobacillales;
 CELL WALL BINDING 1.
CELL WALL BINDING 2.
CATALYTIC (APPROXIMATE).
CELL WALL BINDING 3.
CELL WALL BINDING 4.
CELL WALL BINDING 5.
CELL WALL BINDING 7.
CELL WALL BINDING 7.
CELL WALL BINDING 8.
CELL WALL BINDING 9.
CELL WALL BINDING 9.
CELL WALL BINDING 9.
CELL WALL BINDING 10.
 MW;
 Score 76; DB
Pred. No. 0.00
1; Mismatches
 sequence update)
 ۲,
 GLUCOSYLTRANSFERASE-S.
 signal;
 (POTENTIAL
 5 / Serotype
Serotype C;
 Kawabata
 update)
 Streptococcaceae;
 DB 1;
0.0006;
 069398;
 A
 Repeat; Dental caries.
 mutans
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 (GTF-S)
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 Length 1365;
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i J.J.;
dental
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 EMBL; M29296; AAA26895.1; -.
EMBL; D88653; BAA26107.1; -.
EMBL; D88655; BAA26107.1; -.
EMBL; D88659; BAA26115.1; -.
EMBL; D88669; BAA26115.1; -.
EMBL; D89979; BAA26121.1; -.
EMBL; AE014932; AAN58613.1; -.
EMBL; AE014932; AAN58613.1; -.
EMBL; D89979; BAA26121.1; -.
EMBL; AE014932; AAN58613.1; -.
EMBL; AE014932; AAN58613.1; -.
EMBL; AE014932; AAN58613.1; -.
EMBL; AE014932; AAN58613.1; -.
EMBL; D89979; BAA26111.1; -.
EMBL; D89979; BAA26111.1; -.
EMBL; D89979; BAA26115.1; -.
EMBL; D89979; BAA26115.1; -.
EMBL; D89979; BAA26115.1; -.
EMBL; D89979; BAA26115.1; -.
EMBL; D89659; BAA26115.1; -.
EMBL; D89669; BAA26115.1; -.
EMBL; D89679; BAA26115.1; -.
EMBL; D89679; BAA26115.1; -.
EMBL; D8979; BAA26115.1; -.
EMBL; D89679; BAA26115.1; -.
EMBL; D89679; BAA26115.1; -.
EMBL; D89679; BAA26115.1; -.
EMBL; D8979; BAA26111.1; -.
EMBL; D8979; BAA26115.1; -.
EMBL; D8979;
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 CHAIN
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 OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AGGREGATION OF BACTERIAL CELLS AND FOOD DEERIS, CATALYTIC ACTIVITY: SUCTOBE + {(1,6)-alpha-D-gfructose + {(1,6)-alpha-D-glucosyl}(N+1).
SUBCELULAR LOCATION: Secreted.
 DISEASE: DENTAL CARIES.

MISCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE G
MISCELLANBOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE G
1,3-LINKED GLUCOSE AND SOME 1,6-GLUCOSE). GTF-SI
WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI
 FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 6 cell wall binding 1
 proteome.
 1232
1232
1296
1360
 132
135
137
 58
68
81
113
 301
313
317
328
350
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137
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81
113
 license agreement (See http://www.isb-sib.ch/announce/
 301
313
317
328
350
 202
255
275
 633
688
732
730
 288
 Y -> H (
MT4251,
I -> V (
MT4251,
K -> E (
A -> T (
A ->
 A -> S
A -> V
A -> T
MT4251,
U -> L
D -> N
 GLUCOSYLTRANSFERASE-S
3 X 63 AA APPROXIMATE
 MT4251)
D -> N
MT4251)
Q -> H
D -> N
E -> K
V -> F
 POTENTIAL.
 A -> S (
TDQGSEA
TDQGS ->
MT4245).
T -> A (
MT4251,
 MT8148)
 KKKYTO
 Signal; Repeat;
 Ξ
 NI (IN
 S (IN STRAINS GS-5 AND NO (IN STRAIN MT4245).
V (IN STRAIN MT4245).
L (IN STRAINS GS-5, MT4;
L (IN STRAIN MT8148).
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D (IN STRAIN MT4239, MT9 (IN STRAIN MT4239, MT9 (IN STRAIN MT4239, MT9 (IN STRAINS MT4239), MT9 (IN STRAINS MT4239, MT9 (IN STRAINS MT4239), MT9 (
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 (6) -alpha-D-glucosyl (N)
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 MT4467 AND MT8148).
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N STRAIN MT4467).
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N STRAINS MT4239 A
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 N STRAIN MT4245).
N STRAINS MT4239 A
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 AND MT4245).

1 AND MT8148).

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RESULT 7
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 P17342;
01-AUG-1990
28-FEB-2003
 SEQUENCE
 28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Atrial natriuretic peptide clearance receptor precursor (ANP-C)
(ANPRC) (NPR-C) (Atrial natriuretic peptide C-type receptor).
 ANPC
 HUMAN
 Eukaryota; Metazoa;
Mammalia; Eutheria;
 MEDLINE=90386656; PubMed=2169733; Porter J.G., Arfsten A., Fuller F., Lewicki J.A.;
 Homo sapiens (Human).
 "Isolation and functional expression peptide clearance receptor cDNA."; Biochem. Biophys. Res. Commun. 171:79
 SEQUENCE
 Nucleic Acids Res. 18:3412-3412(1990)
 Lowe D.G., Camerato
 MEDLINE=90287735; PubMed=2162522; Lowe D.G., Camerato T.R., Goeddel D.V.;
 SEQUENCE FROM N.A.
 "cDNA sequence of the human
 receptor.";
Submitted (NOV-1997)
 Rae J.L.,
 TISSUE=Lens epithelium;
 Rae J.L., Shepard A.R.;
"Human lens epithelial mRNA for
 SSUE=Kidney
 FUNCTION: RECEPTOR FOR ATRIAL NATRIURETIC PEPTIDE. I SUBUNIT: Homodimer; disulfide-limbar Subunitane of the subunit of the sub
 SUBUNIT: Homodimer; disulti
SUBCELLULAR LOCATION: Type
ALTERNATIVE PRODUCTS:
 576
 OR ANPRO
 Event=Alternative
 HUMAN
 w
 14;
 Similarity
 IsoId=P17342-1;
 SYSFIRAHDSEVODLIRNII
 NYIFIRAHDSEVOTVIAKII 595
 FROM N.A.
 FROM N.A.
 1198
1220
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 964
1019
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1142
 Conservative
 (Rel.
 AA;
 STANDARD;
 964
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1080
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1282
1311
 (ISOFORM
 61.8%;
70.0%;
 (ISOFORM
 Chordata;
Primates;
 (ISOFORM
 163387
 Created)
 Sequence=Displayed;
 splicing; Named isoforms=2;
 D -> Y (IN STRAIN MT4251).

E -> K (IN STRAIN MT4245 AND MT4251).

IG -> IR (IN STRAIN MT4245).

G -> R (IN STRAIN MT4245).

G -> R (IN STRAIN MT4249).

H -> Q (IN STRAIN MT4239).

S -> N (IN STRAIN MT4239).

Y -> C (IN STRAIN MT4239).

Y -> C (IN STRAIN MT4231 AND MT4467).

F -> L (IN STRAIN MT4245).

Q -> P (IN STRAIN MT4245).

K -> T (IN STRAIN MT4245).

N -> D (IN STRAIN MT4245).

N -> D (IN STRAIN MT4245).

G -> D (IN STRAIN MT4245).

R -> K (IN STRAIN MT4245).

G -> R (IN STRAIN MT4245).

R -> K (IN STRAIN MT42467).

R -> K (IN STRAIN MT42467).

R -> K (IN STRAIN MT4467).

R -> K (IN STRAIN MT4467).

R (IN REF: 1).
 'n
 Score 68;
Pred. No.
 2)
 atrial natriuretic peptide
 2).
 22
 Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
 PRT;
 171:796-803 (1990)
 Mismatches
 atrial natriuretic peptide
 Miller J.A., Gregory L.C.
 541
 IN STRAINS MT4251 AND MT4467).
IN STRAIN MT4467).
IN STRAIN MT4245).
IN STRAINS GS-5 AND MT4467).
 of the human atrial natriuretic
 DB 1;
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AD2 YEAST

MAD2 YEAST

C P40956;

C 01-FEB-1995 (Rel. 31, Created)

T 01-FEB-1995 (Rel. 31, Last sequence update)

I 15-SEP-2003 (Rel. 32, Last annotation update)

B Mitoric spindle checkpoint component MAD2 (Mitory

MAD2 OR VII030W OR J1256
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 <u>-</u>1
 EMBL; X52282; CAA36523.1; --
EMBL; M59305; AAA51734.1; --
EMBL; AF025998; AAB88801.1; --
 -
 CARBOHYD
CARBOHYD
 DOMAIN
TRANSMEM
DOMAIN
DISULFID
DISULFID
DISULFID
CARBOHYD
 Pfam; PF01094; ANF receptor; PRINTS; PR00255; NATPEPTIDER; PR00458; ANF RECEPTO
 MIM; 108982; -. GO:0004872; F:receptor activity; TAS GO; GO:001501; P:skeletal development; GO; GO:0001501; P:skeletal development; InterPro; IPR001828; ANF_receptor. InterPro; IPR001170; Ntpep_receptorN.
 MIM;
 Genew; HGNC:
MIM; 108962;
 PIR; S10150; OYHUCR.
PDB; 1JDN; 05-SEP-01.
 3D-structure.
SIGNAL
 Receptor; Glycoprotein;
 SEQUENCE
 CHAIN
 VARSPLIC
 Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomyces.
Saccharomycetales; Saccharomycetaceae; Saccharomyces.
SEQUENCE FROM N.A
 NCBI_TaxID=4932;
 ISOId=P17342-2; Sequence=VSP_001812;
MISCELLANEOUS: THERE SEEM TO BE AT LEAST THREE AND RECEPTORS: TWATH CULANYLATE CYCLASE ACTIVITY (ANP-A AND ANP-B) AND ONE (ANP-C WHICH IS PROBABLY RESPONSIBLE FOR THE CLEARANCE OF AND FROM THE CIRCULATION WITHOUT A ROLE IN SIGNAL TRANSDUCTION.
SIMILARITY: TO ANP-A AND ANP-B RECEPTORS IN THEIR EXTRACELLULAR SIMILARITY: TO ANP-A AND ANP-B RECEPTORS IN THEIR EXTRACELLULAR
 AND TRANSMEMBRANE DOMAINS.
 234
 HGNC: 7945; NPR3.
 4
 Similarity
8; Conserv
 YSTDETKOLDLEDIVRNI
 YSFIRAHDSEVQDLIRNI
 541
 27
482
505
108
108
213
213
473
293
394
 Conservative
 1
27
 AA;
 481
504
541
136
261
473
473
293
394
 26
541
 59807 MW;
 43.6%;
 RECEPTORS;
 Transmembrane; Signal; Alternative splicing;
 21
 5
 N-LINKED
N-LINKED
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SG -> C (
 Score 48;
Pred. No.
 N-LINKED (GLCNAC. ..) (I

N-LINKED (GLCNAC. ..) (I

N-LINKED (GLCNAC. ..) (I

SG -> C (in isoform 2)

/FTId=VSP 001812.

8A66415F7F7D62B7 CRC64;
 BY SIMILARITY.
INTERCHAIN (BY SIMILARITY).
 BY SIMILARITY
 POTENTIAL: (POTENTIAL).
 EXTRACELLULAR
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 mismatches
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 oved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
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Matches 7
C P33E38;

C P31E38;

T 01-OCT-1993 (Rel. 27, Created)

T 01-OCT-1994 (Rel. 30, Last sequence update)

T 028-FEB-2003 (Rel. 41, Last sequence update)

E Urea amidolyase [Includes: Urea carboxylase (EC 6.3.4.6)

E hydrolase (EC 3.5.1.54)].

B DUR1, 2 OR YBR208C OR YBR1448.

Saccharomyces cerevisiae (Baker's yeast).

E Lukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetales; Saccharomycetales; Saccharomycetales; Saccharomycetales; Saccharomycetales; Saccharomycetales;
 Li R., Havel C., Wat:
Submitted (AUG-1994)
 This SWI
between
the Euro
 use by modified
 "Budding yeast Cdc20: a target of the spindle checkpoint."; Science 279:1041-1044(1998)
 MEDLINE=98128031; PubMed=9461437;
Hwang L.H., Lau L.F., Smith D.L., Mistrot
Hwang E.S., Amon A., Murray A.W.;
 "Feedback control of m Cell 66:519-531(1991).
 SEQUENCE FROM
 Pfam; PF PROSITE;
 MEDLINE=91330300;
 CHARACTERIZATION.
 Submitted
 89999
8998
 EMBL; U14132; AAA21385.1; --
EMBL; Z49305; CAA89321.1; --
PIR; S48302; S48302.
HSSP; Q13257; IDUU.
SGD; S0003567; MAD2.
 -
 INTERACTIONS
 Li R., Murray A
 SEQUENCE
 DOMAIN
 or send an email to license@isb-sib.ch).
 entities
 YEAST
 DUR1
 [nterPro;
 9
 FUNCTION: FEEDBACK CONTROL THAT PREVENTI-
ASSEMBLED SPINDLES FROM LEAVING MITOSIS
SUBUNIT: THE SPINDLE CHECKPOINT COMPLEX
AND MAD3 IT INTERACTS WITH CDC20.
SUBCELLULAR LOCATION: Nuclear.
SIMILARITY: BELONGS TO THE MAD2 FAMILY.
 Buropean Bioinformatics Institute. There are no restrict
by non-profit institutions as long as its content is
ified and this statement is not removed. Usage by and fo
ities requires a license agreement (See http://www.isb-sib-
 SIMILARITY: Contains 1 HORMA domain.
 GO:0005699; C:kinetochore; IDA.
GO:0005643; C:nuclear pore; IDA.
GO:0007094; P:mitotic spindle checkpoint; IGI.
erPro; IPR003511; DNAbind HORMA.
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 cycle; Mitosis; Nuclear protein.
 YEAST
 46
 U
 Similarity
 (SEP-1995)
 SFIRAHDSEVQDLIRNII 22
 PS50815; HORMA; 1.
 TLLKTHODELKDYIRKIL 63
 196 AA;
 Conservative
 N
A
 HORMA;
 Watson
 STANDARD;
 of mitosis
 PubMed=1651172;
 t G
 ť
 22284 MW;
 41.8%;
38.9%;
 the
 J.A., Murray A....,
the EMBL/GenBank/DDBJ
 EMBL/GenBank/DDBJ
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 Score 46;
Pred. No.
 HORMA
 PRT;
 EFE59916C5720644 CRC64;
 Mismatches
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 Length 196;
 Saccharomycetes;
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[1]
SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
MEDLINE=92199240; PubMed-
MEDLINE=92199240; Cooper T
Genbauffe F.S., Cooper T
"The urea amidolyse (DU
"The urea amidolyse (DU
"NA Seq. 2:19-32(1991)."
 R HSSP; P24182; LBWC.

R SGD; SG000412; DURL.2.

R GO; GO:0004039; F:allophanate hydrolase activity; IMP.

R GO; GO:0004847; F:urea carboxylase activity; IMP.

R GO; GO:0019627; P:urea metabolism; IMP.

R InterPro; IPR000120; Amidase.

R InterPro; IPR000120; Amidase.

R InterPro; IPR0001882; Biotin_attach.

R InterPro; IPR00089; Biotin_lipoyl.

R InterPro; IPR005479; CPase L_D2.

R InterPro; IPR005479; CPase L_D.

R InterPro; IPR003778; DUF183.

R InterPro; IPR00378; DUF183.

R InterPro; IPR003483; DUF213.

R InterPro; IPR00383; DUF213.

R Pfam; PF02682; AHS1; 1.

R Pfam; PF02682; AHS1; 1.

R Pfam; PF02785; Biotin_carb C; 1.

R Pfam; PF02785; Biotin_carb C; 1.

R Pfam; PF02785; Biotin_carb C; 1.

R Pfam; PF02785; CPSase_L_chain; 1.

Pfam; PF02786; CPSase_L_D2; 1.

R Pfam; PF02786; CPSase_L_Chain; 1.

PROSITE; PS00186; CPSase_L; 1.

R PROSITE; PS00186; CPSASE_1; 1.

PROSITE; PS00186; CPSASE_1; 1.

PROSITE; PS00186; CPSASE_1; 1.
 STRAIN-S288c;
 -!- FUNCTION: HYDROLYSIS
-!- CATALYTIC ACTIVITY: A
 Submitted
 Rieger M.
 SEQUENCE OF 1-893
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 Yeast
 Saccharomyces cerevisiae in five putative new genes.";
 "A 12.8 kb segment,
 Bussereau F., Mallet
 MEDLINE=93377417;
 STRAIN-S288c
 SEQUENCE OF
 Feldmann
 STRAIN=S288c;
 SEQUENCE
 EMBL; M64926; AAC41643.1; -.
EMBL; Z36077; CAAB5172.1; -.
EMBL; Z21487; CAA79695.1; -.
 entities requires a license agreement (S. or send an email to license@isb-sib.ch).
 HSSP;
 PIR; S46082; S46082.
 NH(3).
COPACTOR: BIOTIN.
PATHWAY: ALLANTOIN AND ARGINI
SUBUNIT: MONOMER.
INDUCTION: BY ALLOPHANATE OR
INDUCTION: BY ALLOPHANATE
 CATALYTIC
 carboxylate
 OXALURATE. REPRESSED IN THE
 SOURCES
 9:797-806 (1993)
 H., Mannhaupt
d (AUG-1994) t
 OF,
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 Hydrolase;
 1487-1835
 873-1835 FROM N.A.
 ACTIVITY:
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 pubMed=1802034;
ooper T.G.;
 PubMed=8368014;
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 Multifunctional
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 FROM N.A.
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 ATP
 G., Schwarzlose C., Vetter I.;
the EMBL/GenBank/DDBJ databases.
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068008;
 15-JUL-1999 (Rel. 38, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
28-FEB-2003 (Rel. 41, Last annotation update)
Bacitracin synthetuse 3 (BA3) (Includes: ATP-dependent both envialanine adenylase (IleA) (Isoleucine activase); ATP-dependent histidine adenylase (D-PheA) (D-phenylalanine activase); ATP-dependent histidine adenylase (HisA) (Histidine activase); ATP-dependent D-aspartate adenylase (D-AspA) (D-aspartate activase); ATP-dependent asparagine adenylase (BASA) (Asparagine activase); Aspartate racemase (BC 5.1.1.13); Phenylalanine racemase (ATP hydrolyzing)
 15-JUL-1999 (Rel. 38,
15-JUL-1999 (Rel. 38,
28-FEB-2003 (Rel. 41,
 SEQUENCE FROM N.A.
STRAIN=ATCC 10716;
 NCBI_TaxID=1402;
 MEDLINE=98089193; PubMed=9427658;
Konz D., Klens A., Schoergendorfer K., Marahiel M.A.;
"The bacitracin biosynthesis operon of Bacillus licheniformis ATCC 10716; molecular characterization of three multi-modular peptide
 Bacillus licheniformis.
 synthetases.";
 -i- CATALYTIC ACTIVITY: L-aspartate = D-aspartate.
-i- CATALYTIC ACTIVITY: ATP + L-phenylalanine = AMP + diphosphate +
 10
 PATHWAY: Cyclic peptide antibiotic bacitracin biosynthesis.
SUBUNIT: LARGE MULTIENZYME COMPLEX OF BA1, BA2 AND BA3.
SUBUNIT: CONSISTS OF FIVE MODULES WITH TWO EPIMERIZATION DOMAINS IN DOMAIN: CONSISTS OF FIVE MODULES WITH TWO EPIMERIZATION DOMAINS IN THE SECOND AND FOURTH MODULES, AND A PUTATIVE C-TERMINAL THIOESTERASE DOMAIN. EACH MODULE INCORPORATES ONE AMINO ACID INTO THE PEPTIDE PRODUCT AND CAN BE FURTHER SUBDIVIDED INTO DOMAINS THE PERTIC FOR SUBSTRATE ADENYLATION, THIOLATION, CONDENSATION RESPONSIBLE FOR SUBSTRATE ADENYLATION, THIOLATION, CONDENSATION (NOT FOR THE INITIATION MODULE), AND EPIMERIZATION (OPTIONAL), AND
 PUNCTION: INDUCES PEPTIDE SYNTHESIS, ACTIVATES AND INCORPORATES FIVE AMINO ACIDS, FORMS A THIAZOLINE RING BETWEEN THE FIRST TWO AMINO ACIDS AND INCOPORATES A D-GLUTAMINE IN THE FOURTH POSITION
 N METHYLATION (OPTIONAL).

MISCELLANEOUS: BACTIRACIN IS A MIXTURE OF AT LEAST TEN CYCLIC MISCELLANEOUS: BACTIRACIN IS A MIXTURE OF AT LEAST TEN CYCLIC DODECAPEPTIDES, THAT DIFFER BY ONE OR TWO AMINO ACIDS. THE MOST DECEMBER TO A BRANCHED CYCLIC DODECAPEPTIDE. IT ABUNDANT IS BACTIRACIN A, A BRANCHED CYCLIC DODECAPEPTIDE. IT CONTAINS AN IN-TERMINAL LINEAR PENTAPEPTIDE MOIETY (ILE-CYS-LEU-D-CONTAINS MITH AN ISOLEUCINE-CYSTEINE THIAZOLINE CONDENSATION GLU-ILE) WITH AN ISOLEUCINE-CYSTEINE THIAZOLINE CONDENSATION GROUP ACIDS IN WHICH THE FREE ALPHA-CARBOXY GROUP OF THE CHIS-D-ASP-ASN), IN WHICH THE FREE ALPHA-CARBOXY GROUP OF THE CHIS-D-ASP-ASN), IN WHICH THE EPSILON-AMINO GROUP OF LYSINE. IT TERMINAL ASN IS BOUND TO THE EPSILON-AMINO GROUP OF LYSINE. IT TERMINAL ASN IS BOUND TO THE EPSILON-AMINO GROUP OF LYSINE.
 phenylalanine.
COFACTOR: CONTAINS 5 COVALENTLY BOUND PHOSPHOPANTETHEINES
 BACLI
 102 PSFAYEPSKDSKVVELLRN 120
 Biol. 4:927-937(1997)
 2 PSYSFIRAHDSEVQDLIRN
 ATP-binding
 8;
 Similarity
 Firmicutes; Bacillales;
 Conservative
 STANDARD;
 AA;
 258
459
830
1395
 40.9%;
42.1%;
 201831
 Created)
 P -> R (IN REF.

LKX -> KKN (IN REF.

I -> M (IN REF.

E -> K (IN REF.

D -> E (IN REF.

1 MW; F52BODDOFE42
 7;
 Score 45;
Pred. No.
 ATP (PO
BIOTIN.
P -> R
 20
 PRT;
 Mismatches
 F52B0DD0FE42CD65 CRC64;
 (POTENTIAL)
 Bacillaceae;
 6359
 DB 1;
70;
 (IN REF. 1). REF. 1). REF. 1).
 4;
 Length 1835;
 Bacillus
 Indels
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 POSITION.
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RESULT 11
YIAJ_ECOLI
ID YIAJ_ECOLI
AC P37671;
AC P37671-1994
DT 01-OCT-1994
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Query Match
Best Local 9
 Matches
 PEAM; PF00501; AMP-binding; 5.
PEAM; PF00668; Condensation; 7.
PEAM; PF00668; Condensation; 7.
PEAM; PF0050; pp-binding; 5.
PEAM; PF00975; Thicestersae; 1.
PROSITE; PS00012; PHOSPHOPANTETHEINE; 4.
PROSITE; PS00455; AMP BINDING; 5.
PROSITE; PS00455; AMP BINDING; 5.
PROSITE; PS00455; AMP BINDING; 5.
PROSITE; PS0075; ACP_DOWAIN; 5.
PROSITE; PS00705; ACP_DOWAIN; 5.
Ligase; Isomerase; Hydrolase; Antibiotic biosynthesis; Ligase; Isomerase; Multifunctional enzyme; Repeat.
Phosphopantetheine; Multifunctional enzyme; Repeat.
 entities requires a license agreement (S or send an email to license@isb-sib.ch).
 the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for content is not removed.
 REPEAT
REPEAT
DOMAIN
DOMAIN
 InterPro; IPR000873; AMP-bind.
InterPro; IPR001242; Condensatn.
InterPro; IPR006163; Pp bind.
InterPro; IPR006162; Ppantne_attach.
InterPro; IPR001031; Thioesterase.
 EMBL; AF007865; AAC06348.1; -.
 BINDING
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 01-0CT-1994
16-0CT-2001
SEQUENCE FROM N.A.
STRAIN=K12 / MG1655;
MEDLINE=94316500; Pu
 Bacteria; Proteobacteria;
Enterobacteriaceae; Escher
 Escherichia
 Hypothetical
 YIAJ OR B3574.
 NCBI_TaxID=562;
 PHE-9, AND ASP-11). SIMILARITY: BELONGS TO THE ATP-DEPENDENT AMP-BINDING ENZYME FAMILY.
 SIMILARITY: Contains 5 acyl carrier domains
 SWISS-PROT entry is copyright. It is produced through a ceen the Swiss Institute of Bioinformatics and the EMBL
 T31679; T31679.
; P14687; 1AMU.
 3186
 l Similarity
10; Conserv
 VPSYSFIRAHDSEVQDLIRNII 22
 VPSFSF----DSSVEDIFTTLI 3203
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transcriptional regulator Yiad
 STANDARD;
 AA;
 4612
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 PubMed=8041620
 40.9%;
 Escherichia
 722923
 Gammaproteobacteria; Enterobacteriales;
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 ACYL CARRIER (ACP) 3
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PHOSPHOPANTETHEINE
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 Score 45;
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 al enzyme; Repeat.
IN 1 (ISOLEUCINE-ACTIVATING)
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IN 3 (HISTIDINE-ACTIVATING).
IN 4 (D-ASPARTIC ACID-ACTIVATI
IN 4 (D-ASPARAGINE-ACTIVATING).
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 (D-PHENYLALANINE-ACTIVATING).
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 Query Match
Best Local Similarity
Matches 10; Conserv
 Noria H.J., Burland V., Daniels D.L., Plunkett G. III, Blattner F.R.; "Analysis of the Escherichia coli genome. V. DNA sequence of the region from 76.0 to 81.5 minutes."; Nucleic Acids Res. 22:2576-2586(1994).
MEDULE.
Kunst F., Oyn
Azevedo V., F
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 MI2D BACSU
P26935;
01-AUG-1992
 Pfam; PF01614; ICLR; 1.

SMART; SM00346; HTH ICLR; 1.

PROSITE; PS01051; HTH ICLR FAMILY; 1.

Hypothetical protein; Transcription regulation; DNA-binding;
 PIR;
 SEQUENCE
SEQUENCE / 60015;
STRAIN-168 / 60015;
MEDLINE-92104493; PubMed=1761221;
MEDLINE-92104493; PubMed=1761221;
Fujita Y., Shindo K., Miwa Y., Yoshida K.;
Fujita Y., Shindo K., Miwa Y., Yoshida K.;
Fujita Y., Shindo K., Miwa Y., Yoshida K.;
Facillus subtilis inositol dehydrogenase-encoding
Bacillus subtilis inositol dehydrogenase-encoding
 Complete proteome.
 InterPro; IPR005471; HTH_ICIR.
InterPro; IPR005473; HTH_ICIRlike.
 EcoGene; EG12278;
 01-AUG-1992
28-FEB-2003
 MEDLINE-95039891; PubMed=7952181; Yoshida K., Sano H., Miwa Y., Ogasa "Cloning and nucleotide sequencing subtilis genome containing the iol Microbiology 140:2289-2298(1994).
 Bacillus subtilis
 NCBI_TaxID=1423;
 Bacteria; Firmicutes;
 SEQUENCE
 STRAIN=168 / BGSC1A1;
 SEQUENCE FROM N.A.
 MEDLINE=98044033;
 SEQUENCE FROM N.A
 SIMILARITY: BELONGS TO THE ICLR FAMILY OF TRANSCRIPTIONAL REGULATORS. STRONG, TO H.INFLUENZAE HI1032.
 OR IOLG OR E83G.
 S47795; S47795
 U00039; AAB18551.1; -.
 BACSU
 N
 PSY--SFIRAHDSEVQDLIRNII 22
 PDYVKSYWESHQHEIQPLTRNTI 191
 FROM N.A.
 B;
8044033; PubMed=9384377;
Ogabawara N., Moszer I., Albertini A.M., Alloni G.,
Ogabawara N., Moszer I., Bloottin A., Borchert S.,
7., Bertero M.G., Bessieres P., Bolottin A., Bronoll S.C., Bron
 282 AA;
 Conservative
 (Rel. 23, Created)
(Rel. 23, Last sequence update)
(Rel. 41, Last annotation updat
 2-dehydrogenase (EC
 AAC76598.1;
 STANDARD;
 yiaJ
 31066 MW;
 64
 40.0%;
 Bacillales; Bacillaceae; Bacillus
 is not removed. Usage by and for commercial agreement (See http://www.isb-sib.ch/announce/
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 Score 44;
Pred. No.
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 Ogasawara N., Fujita
ncing of a 15 kb regione iol operon.";
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RA Brouillet S., Bruschi C.V., Caldwell B., Capuano V., Carter N.M., RA Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A., Ra Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A., Ra Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A., Ra Denizot F., Devine K.M., Dusterhoft A., Ehrlich S.D., Emmerson P.T., Ra Entian K.D., Exrington J., Fabret C., Ferrari E., Foulger D., Ra Ra Fritz C., Fujita M., Fujita Y., Fuma S., Galizzi A., Galleron N., Ra Ghim S.Y., Glaser P., Goffeau A., Golightly E.J., Grandi G., Ra, Guiseppi G., Guy B.J., Haga K., Haiech J., Harwood C.R., Henaut A., Ra Hilbert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L., Ra Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M., Klein C., Ra Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M., Klein C., Ra McLes S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C., Ra McLes S.M., Levine A., Liu H., Masuda S., Lauber J., Lazrevic V., Ra Lee S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C., Ra Lee S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C., Ra Medina N., Mellado R.P., Mizuno M., Moestl D., Nakai S., Noback M., Ra Parro V., Pohl T.M., Portetelle D., Porwollik S., Prescott A.M., Ra Parro V., Pohl T.M., Portetelle B., Rapoport G., Rey M., Reynolds S., Ra Parsto V., Pohl T.M., Portetelle B., Rapoport G., Rey M., Reynolds S., Ra Setiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo B., Setiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo B., Setiguchi J., Sekowska A., Tanaka T., Terpstra P., Tognoni A., Ra Takeuchi M., Tamakas T., Takahashi H., Takemaru K., Soroita R., Waller B., Waller H., Weitzenegger T., Vasarice 10., Yoshikawa H., Yamamet K., Yamamoto H., Yamanet K., Yata K
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 8
 Matches
 Query Match
Best Local
 Ramaley R., Fujita Y., Freese E.;
"Purification and properties of Bacillus subtilis dehydrogenase";
" This Take Transford Tran
 MEDLINE=79239346; PubMed=112095;
 Nature 390:249-256(1997).
 Subtilist; Bg10669; idh.
InterPro; IPR0010683; GFO_IDH_MocA_C.
InterPro; IPR004104; GFO_IDH_MocA_C.
Pfam; PF01408; GFO_IDH_MocA; 1.
Pfam; PF02894; GFO_IDH_MocA_C; 1.
Oxidoreductaee; NAD; Complete proteome.
SEQUENCE 344 AA; 38351 MW; 2FCE908D4E2C332F CRC64;
 use by non-profit institutions as long a modified and this statement is not removed. entities requires a license agreement (See lor send an email to license@isb-sib.ch).
 CHARACTERIZATION.
 EMBL; M76431; AAA22543.1; -.
EMBL; D14399; BAA03296.1; -.
EMBL; Z99124; CAB16006.1; -.
EMBL; Z99124; CAB16006.1; -.
EMBL; CH0511; JH0511.
 between the Swiss Institute of Bioinformatics Institute.
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 SIMILARITY: BELONGS
 276
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 Similarity
 FVAAYDVEIQDFIDSI 291
 FIRAHDSEVQDLIRNI
 Conservative
 40.0%;
 . SUBJECTED TO CATABOLITE REPRESSION TO THE GFO/IDH/MOCA FAMILY.
 21
 Score 44;
Pred. No.
 Bioinformatics
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RESULT 13 YNJ4\_YEAST

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RESULT 14
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 Query Match
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 01-OCT-1996 (Rel. 3
01-OCT-1996 (Rel. 3
15-DEC-1998 (Rel. 3
Hypothetical 66.1 M
 YNJ4 YEAST
P53933;
 This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the E
 Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes; Saccharomycetales; Saccharomycetaceae; Saccharomyces
 Saccharomyces cerevisiae (Baker's yeast)
 Hypothetical 66.1 YNL094W OR N2219.
 MEDIINE 96367601; PubMed=8771715;
Garcia-Cantalejo J., Boskovic J., Jimenez
Garcia-Cantalejo S. a 14.2 kb fragment of
"Sequence analysis of a 14.2 kb fragment of
chromosome XIV that includes the ypt53, tRNP
 NCBI_TaxID=4932;
 EMBL; X85811; CAA59823.1; ALT_INIT.
EMBL; Z71370; CAA55970.1; -.
PIR; S65033; S65033,
SGD; S0005038; YNL094W.
GO; GO:0015629; C:actin cytoskeleton;
GO; GO:0030036; P:actin cytoskeleton C
 four
 STRAIN=S288c
 SEQUENCE FROM N.A.
 P32871;
01-OCT-1993
01-OCT-1993
28-FEB-2003
 Yeast
 Hypothetical
SEQUENCE 58
 01-OCT-1993 (Rel. 27, Created)
01-OCT-1993 (Rel. 27, Last sequence update)
01-OCT-1993 (Rel. 41, Last annotation update)
28-FEB-2003 (Rel. 41, Last annotation update)
phosphatidylinositol-4,5-bisphosphate 3-kinase
alpha isoform (EC 2.7.1.153) (PI3-kinase pl10 s
 BOVIN
 MEDLINE=92354059; PubMed=1322797;
Hiles I.D., Otsu M., Volinia S., Fry M.J.,
Panayotou G., Ruiz-Larrea F., Thompson A.,
Courtneidge S.A., Parker P.J., Waterfield M
 Eukaryota; Metazoa;
Mammalia; Eutheria;
 "Phosphatidylinositol 3-kinase: structure kd catalytic subunit."; Cell 70:419-429(1992).
 TISSUE=Brain;
 SEQUENCE FROM N.A.,
 Bovidae; Bovinae; Bos.
NCBI_TaxID=9913;
 Bos taurus
 PIK3CA.
 3-kinase p110)
 mosome XIV that includes the ypt53, tRNALeu and new open reading frames.";
 12:599-608(1996).
 BOVIN
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 l Similarity
9; Conserv
 SMSDVPSHDEEVMNEVNNII
 SYSFIRAHDSEVQDLIRNII
 11 protein.
587 AA; 6
 Metazoa;
 (Bovine).
 Conservative
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 FY1679;
 (PI3K).
 STANDARD;
 34,
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37,
 kDa protein
 40.0%;
 66134 MW;
 Last sequence update)
Last annotation update)
protein in RPS7B-YPTS3 intergenic region
 Chordata; Craniata; Vertebra
Cetartiodactyla; Ruminantia;
 Created)
 AND
 PARTIAL
 Score 44; DB Pred. No. 29; 4; Mismatches
 PRT;
 449
 22
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 B85C525548BA34BC CRC64;
 SEQUENCE
 587
 1068
 organization and biogenesis;
 IPI.
 (See http://www.isb-sib.ch/announce/
 There are no restrictions in as its content is in
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Eukaryota; Metazoa; Mammalia; Eutheria;

Chordata; Primates;

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SEQUENCE FROM N.A. MEDLINE=95229146; NCBI\_TaxID=9606;

PubMed=7713498

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C P42336; 099762;
C P42336; 099762;
C 101-NOV-1995 (Rel. 32, Created)

PI 01-NOV-1995 (Rel. 32, Last sequence update)

PI 01-NOV-1995 (Rel. 41, Last annotation update)

PI 28-FEB-2003 (Rel. 41, Last annotation update)

Phosphatidylinositol-4,5-bisphosphate 3-kinase cat

Phosphatisoform (EC 2.7.1.153) (PI3-kinase pl10 sub)

R alpha isoform (EC 2.7.1.153)

PI 3-7-9 pl10) (PI3K).
 RESULT 15
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 R PIR; A4342; A4327; A4328; C2.
R InterPro; IPR000008; C2.
R InterPro; IPR000403; P13K C2.
R InterPro; IPR002420; P13K C2.
R InterPro; IPR003113; P13K, D85B.
R InterPro; IPR001263; P13Ka.
R InterPro; IPR001263; P13Ka.
R InterPro; IPR001263; P13K_C2; 1.
Pfam; PF00794; P13K_D85B; 1.
Pfam; PF00794; P13K_D85B; 1.
Pfam; PF00794; P13K_D85B; 1.
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PR SMART; SM0146; P13KA; 1.
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 -i- FUNCTION: PHOSPHORYLATES PIDINS, PIDINSAP AND
 EMBL; M93252; AAA30698.1; -.
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 SUBUNIT.
- SIMILARITY:
- SIMILARITY:
 PREFERENCE FOR PTDINS(4,5)P2.

CATALTYTC ACTIVITY: ATP + 1-phosphatidy1-1D-myo-inositol bisphosphate = ADP + 1-phosphatidy1-1D-myo-inositol 3,4,6 trisphosphate.

LTISPHOSPHATE.

SUBUNIT: HETERODIMER OF A P110 (CATALYTIC) AND A P85 (RESUBUNIT: HETERODIMER OF A P110 (CATALYTIC) A P110
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 MPVCEFDMVKDPEVQDFRRNIL 144
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Contains 1
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C2 domain.
 Score 44; DB Pred. No. 56; 2; Mismatches
 2;
 PI3/PI4-KINASES
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Pfam; pF00454; pI3 F14 kinase; 1.

Pfam; pF00792; PI3K_C2; 1.

Pfam; pF00792; PI3K_D85; 1.

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Pfam; pF00794; PI3K_Tbd; 1.

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Pfam; pF00613; PI3K_2; 1.

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SMART; SM00146; PI3K_1 1.

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PROSITE; PS00016; PI3_4 KINASE_1; 1.

PROSITE; PS00016; PI3_4 KINASE_2; 1.

PROSITE; PS00915; PI3_4 KINASE_3; 1.
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 Volinia S., Hiles I., Ormondroyd E., Nizetic D., Antonacci R., Rocchi M., Waterfield M.; "Molecular cloning, cDNA sequence, and chromosomal localization of the human phosphatidylinositol 3-kinase p110 alpha (PIK3CA) gene."; Genomics 24:472-477(1994).
 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
 "Cloning and mutagenesis of the p110 alpha subunit of human phosphoinositide 3'-hydroxykinase."; Bioorg. Med. Chem. 5:65-74(1997).
-I- FUNCTION: PHOSPHORYLATES PIDINS, PIDINS4P AND PIDINS(4,5)P2 WITH
 EMBL; Z29090; CAA62333.1; -.
EMBL; U79143; AAB39753.1; -.
PIR; I38110; I38110.
 SUBUNIT.
-!- SIMILARITY: BELONGS TO THE PI3/PI4-KINASES FAMILY.
-!- SIMILARITY: Contains 1 C2 domain.
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 SEQUENCE FROM N.A.
 InterPro; IPR000008; C2.
InterPro; IPR000403; PI3 PI4 kinase.
InterPro; IPR002420; PI3K_C2.
InterPro; IPR002113; PI3K_P85B.
InterPro; IPR00314; PI3K_ras_bind.
InterPro; IPR001263; PI3Ka.
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CONFLICT
 Genew; HGNC:8975; PIK3CA.
 MIM; 171834; -.
GO; GO:0007048; P:oncogenesis; TAS.
 Transferase;
 PREFERENCE FOR PTDINS(4,5)P2.

CATALYTIC ACTIVITY: ATP + 1-phosphatidyl-1D-myo-inositol 4,5-bisphosphate = ADP + 1-phosphatidyl-1D-myo-inositol 3,4,5-bisphosphate
 trisphosphate.
SUBUNIT: HETERODIMER OF A P110 (CATALYTIC)
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X Sato S., Inoue M., Handa N., Aizawa Y., Isobe Y., Katayama T.;

NA Sequence of the glucosyltransferase gene of serotype d

"DNA sequence of the glucosyltransferase gene of serotype d

Streptcocccus sobrinus.";

I DNA Seq. 4:19-27(1993).

I DNA Seq. 4:19-27(1993).

R EMBL; D13858; BAA02976.1; -..

R EMBL; D13858; BAA02976.1; -..

R InterPro; IPR003318; Glyco_hydro_70.

R InterPro; IPR003318; Glyco_hydro_70.

R Pfam; PF01473; CW_binding_1; 16.

R Pfam; PF01473; CW_binding_1; 16.

R Pfam; PF0324; Glyco_hydro_70; 1.

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R Pfam; PF03324; Glyco_hydro_70; 1.

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 Q59983 PRELIMINARY; PRT; 1590 AA.
Q59983;
Q1-NOV-1996 (TrEMBLrel. 01, Created)
Q1-NOV-1996 (TrEMBLrel. 01, Last sequence update)
Q1-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5).
 Streptococcus sobrinus.
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 Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
 SEQUENCE
 STRAIN=OMZ176;
 NCBI_TaxID=1310;
 SEQUENCE FROM N.A.
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Q95WU6
Q9AQR3
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Q00600
Q01CH3
Q9LCH3
Q54178
Q00599
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064072
6 031949
 Q9K5K6
Q8XJV7
Q8QV16
Q9PR58
Q98PL8
Q9F1J9
Q8GS71
6 Q987H1
C74759
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 Score 98; DB 2;
Pred. No. 8.1e-0
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 .1e-07;
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 Q9rnp7 vibrio chol
Q9zix9 borrelia bu
 Q91ch3 streptococc
Q54178 streptococc
Q00599 streptococc
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Q9pjf0 chlamydia m
Q8xlb3 clostridium
 O64072 bacteriopha
O31949 bacillus su
 Q8giy5 mycoplasma
 Q8qv08 avian reovi
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 "DNA and amino-acid sequences of water-insoluble-glucan synthetase produced from Streptococcus sobrinus ATCC 33478 ";
Ann. Kagoshima Univ. Dental School 16:23-29(1996).
EMBL; D63570; BAA06792.1; -.
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding 1; 15-
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 Streptococcus.
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 Leuconostoc mesenteroides.
Bacteria, Firmicutes; Lactobacillales; Leuconostoc
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 SEQUENCE FROM N.A.
STRAIN=NRRI B1299;
MEDILINE=97136686;
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 InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro_70.
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EMBL; U38181; AAB40875.1;
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Arguello-Morales M.A., Re
Willemot R.M., Monsan P.;
 Bacteria; Firmicutes; Lactobacillales; Leuconostoc
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01_MAR-2001 (TrEMBLrel. 16,
01_OCT-2002 (TrEMBLrel. 22,
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STRAIN=B-742CB;
Kim H.-S., Kim D., Ryu H.-J., Robyt J.F.;
Kim H.-S., Kim D., Robyt J., R
 Sequence analysis of the gene encoding
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Bacteria, Firmicutes; Lactobacillales; Leuconostoc
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"Cloning and sequencing of a gene coding for an extracellular

"cloning and sequencing of a gene coding for an extracellular

dextransucrase (DSRB) from Leuconostoc mesenteroides NRRL B-1299

"I synthesizing only a a(1-6) glucan.";

FEMS Microbiol. Lett. 0:0-0(1998).

"I FEMS Microbiol. Lett. 0:0-0(1998).

"I FEMS, AF030129; AAB95453.1; -.

"I REMEI; AF030129; AAB95453.1; -.

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"I Glycosyltransferase; Transferase.

"I Glycosyltransferase; Transferase.

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Pfam; PF02324; Glycohydro-70; 1.
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 InterPro; IPR002479; CW_binding.
InterPro; IPR003118; Glyco hydro_70.
InterPro; IPR003318; Glyco hydro_70.
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InterPro; IPR01324; Glyco hydro_70; 1.
InterPro; IPR02324; Glycosyltransferase.
SEQUENCE 1527 AA; 169835 MW; F9I
 Leuconostoc mesenteroides Lo
Submitted (JAN-2001) to the
EMBL; AY017384; AAG61158.1;
 Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lact
 Dextransucrase
 Neubauer H., Bauche A., Mollet B., "Isolation and characterization of the dextransucrase DsrD
 NCBI_TaxID=1245;
 SEQUENCE FROM N.A.
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SEQUENCE FROM N.A.

MEDLINE=21958684; PubMed=11960691;

Medda N., Fukushima K., Nomura Y., Senpuku H., Hayakawa Hanada N., Shiroza T., Abiko Y.;

Mukasa H., Shiroza T., Abiko Y.;

"Cloning and nucleotide sequence analysis of the Streptoc sobrinus gtfU gene that produces a highly branched water-
 Streptococcus sobrinus.
Bacteria; Firmicutes; I
 Glucosyltransferase
 Q8KZL5
 InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW binding_1; 6.
Pfam; PF02324; Glyco_hydro_70; 1.
 NCBI_TaxID=1310;
 Biochim. Biophys. Acta 1570:75-79 (2002).
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 Lactobacillales; Streptococcaceae;
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 EMBL; AB020020; BAA90527.1; -.
HSSP; P06278; 1VJS.
InterPro; IPR003318; Glyco_hydro_Pfam; PF02324; Glyco_hydro_70; 1.
SEQUENCE 1016 AA; 110344 MW;
 mesenteroides NRRL B-512F.";
Biosci. Biotechnol. Biochem. 64:29-38(2000)
 MEDLINE=20169623; PubMed=10705445;
Funane K., Mizuno K., Takahara H., Kobayashi
"Gene encoding a dextrangucrase-like protein
 Leuconostoc mesenteroides.
Bacteria; Firmicutes; Lact
 STRAIN=NRRL B-512F;
 SEQUENCE FROM N.A.
 Q9WXJ5;
01-NOV-1999
 NCBI_TaxID=1245;
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 01-MAR-2003 (TrEMBLrel. 23,
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Dextransucrase (EC 2.4.1.5)
 QBG9Q2;
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 Q8G9Q2
 MEDLINE=22231661; PubMed=12270834; Bozonnet S., Dols-Lafargue M., Fabre Mondan P., Willemot R.M.; "Molecular characterisation of DSR-E,"
 synthesising dextransucrase with two
 Dextransucrase
 Transferase; Glycosyltransferase.
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 SEQUENCE FROM N.A.
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 Bacteriol. 184:5753-5761(2002).
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 "S. cricetus glucosyltransferase(gtfS and gtfT) submitted (MAR-1999) to the EMBL/GenBank/DDBJ EMBL, AB026123; BAA77237.1;
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01-AUG-1998
 Inoue M., Fukui K., Miyagi A.;
"S.cricetus glucosyltransferase(gtfS and gtfT)
submitted (MAR-1999) to the EMBL/GenBank/DDBJ
EMBL; AB026123; BAA77236.1;
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 InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 10.
Pfam; PF02324; Glyco_hydro_70; 1.
 STRAIN=HS-6;
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 Bacteria; Firmicutes;
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 1512 AA;
 (TrEMBLrel.) (TrEMBLrel.
 1338 AA;
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 Miyagi A.;
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 Lactobacillales; Streptococcaceae;
 Lactobacillales;
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 Streptococcus salivarius.
Bacteria, Firmicutes, Lactobacillales, Streptococcaceae,
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 01-AUG-1998 (TrEMBLrel. 07, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
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EMBL; AF049609; AACOS156.1; -
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 "Streptococcus salivarius V1477 gtfN.";
 Jaffe R.I.;
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MEDLINE-95122197; PubMed=7822030;

Simpson C.L., Giffard P.M., Jacques N.A.;

Streptococcus salivarius ATCC 25975 possesses at least two coding for primer-independent glucosyltransferases.";

Infect. Immun. 63:609-621(1995).

EMBL; L35495, AAC41412.1;

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is derived by analysis of the total score distribution.
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US-09-740-274
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; Patent No. 1000 Scott E.
; APPLICANT: Nichols, Scott E.
; TITLE OF INVENTION: Glucan-containing Compositions and Paper
; FILE REFERENCE: 0357CRD
; CURRENT APPLICATION NUMBER: US/09/740,274
; CURRENT FILING DATE: 2000-12-19

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             GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0357CR
CURRENT APPLICATION UNMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/007,999
CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 2
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 2
                                                                                                                                 Sequence 2, Application US/09210361 Patent No. 6284479
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Best Local :
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Best Local
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SEQ ID NO 4
   EARLIER APPLICATION
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TITLE OF INVENTION: Substitutes for Modified Starch
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0356D
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APPLICATION NUMBER: 08/482,711
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22; Conserv
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NUMBER: 09/007,999
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Pred. No. 2.96
1; Mismatches
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Pred. No. 3.4e-10;
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; LENGTH: 1475
; TYPE: PRT
; ORGANISM: Streptococcus mutans
US-09-210-361-2
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PRIOR APPLICATION NUMBER: 09/00
PRIOR FILING DATE: 1998-01-16
PRIOR PRICING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009
PRIOR FILING DATE: 1998-01-20
PRIOR FILING DATE: 1998-01-20
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EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1998-01-20
EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
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SEQ ID NO 2
                                                                            Matches
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Patent No. 6465203
GENERAL INFORMATION:
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Best Local Similarity
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Best Local Similarity
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PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/0
PRIOR FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
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552 VPSYSFIRAHDSEVQDLIADII 573
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                                   VPSYSFIRAHDSEVQDLIRNII 22
                                                                        Conservative
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Pred. No. 2
                                                                          Mismatches
                                                                                                           DB 4;
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RESULT 6
US-09-604-957-5
; Sequence 5, Application US/09604957
; Patent No. 6486314

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, TYPE: PRT
, ORGANISM: Lactobacillus reuteri
US-09-604-957-7
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Best Local
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                                                                  APPLICANT: VAN GEEL-SCHUTTEN, GE
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, RÖBERT-JAN
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388 CURRENT APPLICATION NUMBER: US/09/604,957 CURRENT FILING DATE: 2000-06-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
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APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
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SOFTWARE: PatentIn Ver. 2
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CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
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SOFTWARE: PatentIn Ver. 2.1
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANGFERASE AND NOVEL GLUCAN
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APPLICANT: DIJKHUIZEN, LUBBERT
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No. 6486314
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                                                                RAHAOUI, HAKIM
LEER, ROBERT-JAN
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59.1%;
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                                                                                                                      GERRITDINA HENDRIKA
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Pred. No. 6.8e
5; Mismatches
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US-08-793-824-2
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Best Local Similarity
Matches 12; Conserv
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SEQ ID NO 2
LENGTH: 2057
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Patent No. 6570065
GENERAL INFORMATION:
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Best Local Similarity
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SEQ ID NO 3
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APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules
FILE REFERENCE: 147-196P
                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/09/499,203
CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                   APPLICANT: Simpson, Chr
APPLICANT: Giffard, Phi
APPLICANT: Jacques, Nic
TITLE OF INVENTION: Gen
TITLE OF INVENTION: INC
NUMBER OF SEQUENCES: 2
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: PRT
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            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0
SOFTWARE: PatentIn Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                    STREET: Le
CITY: No.
STATE: Nev
                                                                                                                   COUNTRY:
                                                                                                                                                                                     ADDRESSEE:
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                                                                                                                                    New South Wales
                                                                                                                                                  E: Griffith Hack & Co
Level 8, 168 Walker Street
O. 5981838th Sydney
                                                                                                                   Australia
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59.1%;
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Genetic Manipulation of Plants to
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                                                                                                                                                                                                                                                                                                            Christine Lynn
                                                                                                                                                                                                                                         Increase Stored Carbohydrates
                                                                                                                                                                                                                                                                                            Philip Morrison
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Pred. No. 0.0027;
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Pred. No. 0.00021
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APPLICATION NUMBER:

US/08/793,824

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                                                                                                                                                  US-09-008-172-2
                                                                                                                                                                                                                                                                                                                                                    ; TYPE: PRT ; ORGANISM: Streptococcus mutans US-09-604-957-4
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          Sequence 2, Application US/09008172
Patent No. 6127602
GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch and
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0358D
CURRENT APPLICATION NUMBER: US/09/008,172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence 4, Application US/09604957
Patent No. 6486314
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Best Local (
CURRENT
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INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 1577 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQ ID NOS: 17
SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 545
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APPLICATION NUMBER:
FILING DATE: 24-AUG-
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14; Conserv
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LEER, ROBERT-JAN
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61 2 957 6288
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70.0%;
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Pred. No. 0.0018;
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Pred. No. 0.0029;
4; Mismatches
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Best Local Similarity
Watches 14; Conserva
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US-09-210-361-6
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                                                                                                                                                                                                                                   RESULT 14
US-09-740-274-6
                                                                                                                                                       Sequence 6, Application US/09740274
Patent No. 6445203
GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
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          APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper FILE REFERENCE: 0357CRD
CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR APPLICATION NUMBER: 09/007,999
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Best Local (
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CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
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EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 2
SOFTWARE: FastSEQ for Windows Version
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EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: Substitutes for Modified Starches and TITLE OF INVENTION: Latexes in Paper Manufacture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: FastSEQ
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EARLIER APPLICATION NUMBER: 08/482,711
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TYPE: PRT
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1998-01-16
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70.0%;
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70.0%;
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Pred. No.
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Pred. No. 0.0057;
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GENERAL INFORMATION:

APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA

APPLICANT: DIJKHUIZEN, LUBBERT

APPLICANT: RAHAOUI, HAKIM

APPLICANT: LEER, ROBERT-JAN

TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN

FILE REFERENCE: BO 43388

CURRENT APPLICATION NUMBER: US/09/604,957

CURRENT FILING DATE: 2000-06-28

PRIOR APPLICATION NUMBER: 00201871.1

PRIOR FILING DATE: 2000-05-25

NUMBER OF SEQ ID NOS: 17

SOFTWARE: PATENTIN Ver. 2.1

LENGTH: 584

TYPE: PRT

ORGANISM: Leuconostoc mesenteroides

US-09-604-957-6
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PRIOR FILING DATE: 1995-06-07
PRIOR FELING DATE: 1998-01-20
PRIOR FELING DATE: 1998-01-20
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 1998-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FASTSEQ for Windows Version 3
SEQ ID NO 6
LENGTH: 1430
TYPE: PRI
OCCANTISM.
Search completed: November 13, 2003, 09:48:01 Job time: 14.2844 secs
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US-09-604-957-6
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                                                                                                                                                                                         Query Match 60.0%; Score 66; DB 4; Length 584; Best Local Similarity 61.1%; Pred. No. 0.0043; Matches 11; Conservative 4; Mismatches 3; Indels
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                                                                                               167 IPNÝSFVRAHDYDAODPÍ 184
                                                                                                                                            1 VPSYSFIRAHDSEVODLI 18
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                                                                                                                                                                                         Gaps
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                                                                                                                                                                                            0;
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Database
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Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein search, using sw model
Published Applications AA:*

1: /cgn2_6/ptodata/2/pubpaa/US07 PUBCOMB.pep:*

2: /cgn2_6/ptodata/2/pubpaa/US06 NEW PUB.pep:*

3: /cgn2_6/ptodata/2/pubpaa/US06 NEW PUB.pep:*

4: /cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*

5: /cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*

6: /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*

7: /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*

8: /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*

9: /cgn2_6/ptodata/2/pubpaa/US09B_PUBCOMB.pep:*

10: /cgn2_6/ptodata/2/pubpaa/US09B_PUBCOMB.pep:*

11: /cgn2_6/ptodata/2/pubpaa/US09C_PUBCOMB.pep:*

12: /cgn2_6/ptodata/2/pubpaa/US09C_PUBCOMB.pep:*

13: /cgn2_6/ptodata/2/pubpaa/US09C_PUBCOMB.pep:*

14: /cgn2_6/ptodata/2/pubpaa/US09C_PUBCOMB.pep:*

15: /cgn2_6/ptodata/2/pubpaa/US09C_PUBCOMB.pep:*

16: /cgn2_6/ptodata/2/pubpaa/US10B_PUBCOMB.pep:*

16: /cgn2_6/ptodata/2/pubpaa/US10C_MEW_PUB.pep:*

17: /cgn2_6/ptodata/2/pubpaa/US10C_NEW_PUB.pep:*

16: /cgn2_6/ptodata/2/pubpaa/US10C_NEW_PUB.pep:*

17: /cgn2_6/ptodata/2/pubpaa/US10C_NEW_PUB.pep:*

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19: /cgn2_6/ptodata/2/pubpaa/US10C_NEW_PUB.pep:*
                                                                                                                                                               BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          666188 seqs, 182559486 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-290-049A-15
110
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Copyright (c) 1993 - 2003 Compugen Ltd.
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARII

мн ооооо I	Length 1375 1475 1475 522 535 1781 1781 584 545 1430 1430	Match 100.0 100.0 90.0 74.5 69.1 69.1 64.5 61.8 61.8	Score 110 99 82 76 76 71 68 68 68	Result NO. 2 2 4 4 6 6 7 7
	44 4 44 44 44 44 44 44 44 44 44 44 44 4	DB 1 10 10 10 10 10 10 10 10 10 10 10 10 1	h Length DB I 1 1375 9 U 0 11475 9 U 5 522 10 1 1781 10 1 1781 10 5 584 10 8 1430 9 U 0 282 11 0 1068 12 1 1068 12 1 1068 15 1	Match Length DB I 100.0 1375 9 U 90.0 1475 9 U 74.5 522 10 69.1 1781 10 64.5 584 10 64.6 1430 9 U 61.8 1430 9 U 61.8 1430 9 U 61.8 153 39.1 347 15 39.1 368 15 39.1 368 15 39.1 368 15 39.1 37.7 1217 9 U

40.5 36.8 296 14 US-10-080-960-19 40.5 36.8 487 9 US-09-815-242-12456 40 36.4 487 9 US-09-815-153-163 40 36.4 487 9 US-09-815-153-163 40 36.4 49 10 US-09-82-027-37 40 36.4 472 12 US-10-413-536-4 40 36.4 472 12 US-10-413-536-4 40 36.4 573 9 US-09-815-242-12247 40 36.4 573 9 US-09-815-242-12247 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-815-242-12045 40 36.4 573 9 US-09-9815-242-12045 40 36.4 573 9 US-09-9815-242-12045 40 36.4 573 9 US-09-9815-242-12045 40 36.4 573 9 US-09-9815-242-13179 39.5 35.9 108 10 US-09-993-445-136-326 39.5 5 1383 15 US-10-021-955-87 39.3 35.5 456 10 US-09-925-300-11595 39.5 35.0 456 10 US-09-935-300-11595
6.8 481 9 US-09-815-242-1245 6.8 481 9 US-09-815-242-1245 6.4 43 19 US-09-815-242-1245 6.4 43 10 US-09-815-153-163 6.4 43 10 US-09-815-242-1247 6.4 472 12 US-10-413-536-4 6.4 472 12 US-10-413-536-4 6.4 472 12 US-09-815-242-1224 6.4 573 9 US-09-815-242-1224 6.4 573 9 US-09-815-242-1224 6.4 779 12 US-10-353-929-49 6.4 779 12 US-10-353-929-49 6.4 779 12 US-10-286-264-106 6.4 779 12 US-10-286-264-106 6.4 779 12 US-09-815-242-1224 6.4 779 12 US-09-815-242-1224 6.4 779 12 US-09-925-297-482 6.5 108 10 US-09-925-297-482 6.5 108 10 US-09-925-297-882 6.5 1383 15 US-10-021-955-86 6.5 1383 15 US-10-021-955-86 6.5 1383 15 US-10-021-955-86 6.6 10 US-09-913A-115 6.7 1383 15 US-10-021-955-87 6.8 1383 15 US-10-021-955-87 6.9 1383 15 US-10-021-955-95 6.9 1383 15 US-10-021-955-95 6.9 1383 15 US-10-021-955-95 6.9 1383 15 US-10-021-955-9
14 US-10-080-960-19 9 US-09-815-242-1245 9 US-09-815-242-1245 11 US-09-813-153-6-4 11 US-09-815-242-1273 10 US-09-815-242-1224 10 US-09-815-242-1224 9 US-09-815-242-1224 9 US-09-815-242-1224 9 US-09-815-242-1224 12 US-10-353-929-49 15 US-10-286-264-106 15 US-10-0764-868-895 9 US-09-8764-868-895 10 US-09-875-974-82 11 US-09-925-297-482 11 US-09-925-297-482 12 US-10-156-761-914 13 US-10-156-761-914 14 US-10-088-916A-11 15 US-10-088-916A-11 15 US-10-088-916A-11 15 US-10-088-916A-11 16 US-09-925-300-159 17 US-09-925-300-159 18 US-10-205-219-91 19 US-09-925-300-159 19 US-09-925-300-159 19 US-09-925-300-159 19 US-09-925-300-159 19 US-09-915-6-761-865
US-10-080-9815-242-1244 US-09-815-242-1244 US-09-815-242-1244 US-09-815-153-163 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-09-815-242-1204 US-10-28-264-106 US-09-925-297-482 US-09-925-297-482 US-09-934-455-326 US-09-934-455-326 US-10-021-955-87 US-10-106-698-761 US-10-205-219-91 US-10-205-219-91 US-10-205-219-91 US-09-925-300-159 US-09-915-242-131-185
109-815-242-1245 109-815-242-1245 109-815-242-1245 109-815-242-1245 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-1224 109-815-242-131-124 109-815-242-131-124 109-815-816-816-816-816-816-816-816-816-816-816

ALIGNMENTS

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PRIOR FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 4
LENGTH: 1375
TYPE: PRT
ORGANISM: streptococcus mutans
US-09-740-274-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 1
US-09-740-274-4
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Patent No. US20020031826A1
GENERAL INFORMATION:
                                                              Matches
                                                                                Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: 09/
PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/
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CURRENT FILING DATE: 2000-12-19
CURRENT FILING DATE: 2000-12-19
                                                                                                                                                                                                                                                                                                                                                                                           PRIOR FILING DATE: 1998-PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION:
FILE REFERENCE: 035
                                                                                                                                                                                                                                                                                                                                                                            PRIOR FILING DATE:
1 VPSYSFIRAHDSEVQDLIRNII 22
                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nichols, Scott E.
                                                            100.0%; Score 110; DB 9; ilarity 100.0%; Pred. No. 3.6e-09; Conservative 0; Mismatches 0;
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                                                                                                                                                                                                                                                                                                                                                    09/008,172
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                                                                                                   Length 1375;
                                                            Indels
                                                            0;
                                                            Gaps
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578

VPSYSFIRAHDSEVQDLIRNII 599

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; TYPE: PRT
; ORGANISM: Leuconostoc mesenteroides
US-09-995-749A-11
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                                                                                                                                   SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 11
LENGTH: 522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER:
PRIOR FILLING DATE: 1998-12
PRIOR APPLICATION NUMBER:
PRIOR FILLING DATE: 1998-01
PRIOR APPLICATION NUMBER:
PRIOR FILLING DATE: 1995-06
PRIOR PILLING DATE: 1998-01
PRIOR FILLING DATE: 1998-01
Query Match 74.:
Best Local Similarity 63.:
Matches 14; Conservative
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Best Local Similarity 90.9%;
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SEQ ID NO 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
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                                                                                                                                                                                                               CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
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PRIOR FILING DATE: 1995-05-07
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 1998-01-16
                                                                                                                                                                                                                                                                                                                                      APPLICANT: LEER, ROBERT-JAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
FILE REFERENCE: B043388-CIP
                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: VAN GEEL-SCHUTTEN,
APPLICANT: DIJKHUIZEN, LUBBE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Glucan-containing Compositions and Paper
                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
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                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 19
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1998-12-11
UMRPP
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    Mismatches

    5
  Score 82; DB 10;
Pred. No. 4.7e-05;
5; Mismatches 3
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Pred. No. 2.
                                       DB 10; Length 522;
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    Indels
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Best Local Similarity
Conservations 13; Conservation
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                                                                                                                                                                                                       SOFINGER 1781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 13
LENGTH: 535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 2, Application to Patent No. US20020155568A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 13, Application US/09995749A Patent No. US20020155568A1 GENERAL INFORMATION:
                                                                                          Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: VAN GEEL-SCHUTTEN, G
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
                                                                                                                                                                                                                                                                    PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES FILE REFERENCE: BO43388-CIP CURRENT APPLICATION NUMBER: US/09/995,749A CURRENT FILING DATE: 2001-11-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
                                                                                                                                                                                         LENGTH: 17
TYPE: PRT
                                                                                                                                                                                                                                                    SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
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ORGANISM: Lactobacillus reuteri
                                                                                                                                                                         ORGANISM: Lactobacillus reuteri
                                                                  Local 5.
1123 IPNYSEVRAHDNNSQDQIQNAI 1144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           144 IPNYSFVRAHDNNSQDQIQNAI 165
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                                  1 VPSYSFIRAHDSEVQDLIRNII 22
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                                                                                              Similarity
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                                                                                            69.1%; Score 76; DB 10; Length 1781; 59.1%; Pred. No. 0.0018;
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RESULT 8
US-09-740-274-6
; Sequence 6, Application US/09740274
; Patent No. US2002031826A1
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GENERAL INFORMATION
                                                                                                                                                                                                                          Query Match
Best Local Similarity
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Patent No. US20020155568A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
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CURRENT FILING DATE: 2001-11-29
PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEO ID NOS: 19
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
FILE REFERENCE: B043388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: VAN GEEL-SCHUTTEN, G
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: PatentIn Ver. 2.1 EQ ID NO 10
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SOFTWARE: PatentIn Ver. 2.1
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PRIOR FILING DATE: 2000-05-25
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES
                                                                                                                                                                                                                                                                                                    TYPE: PRT ORGANISM: Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
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                                                                                                                                                                                                                                                                                                                                               ENGTH: 545
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les 12; Conserv
                                                                                                                                  156 NYIFIRAHDSEVQTVIAKII 175
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b. US20020155568A1
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DIJKHUIZEN, LULL
TYOTT, HAKIM
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70.0%;
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RESULT 10 US-10-101-235A-8

Sequence 8, Application US/10101235A Publication No. US20030182669A1 GENERAL INFORMATION:
APPLICANT: Rockman, Howard A.
APPLICANT: Naga Prasad, Sathyamangla V.

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                                                                                                                                                                                                                                                                                                            Publication:
GENERAL INFORMATION:
APPLICANT: Hoch, James
APPLICANT: Dartois, Veronique
TITLE OF INVENTION: METABOLIC SELECTION METHODS
234/191
SPERRENCE: 234/191
US/09/557,796
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PRIOR FILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/478,704
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR APPLICATION NUMBER: 09/009,620
PRIOR FILING DATE: 1998-01-20
PRIOR APPLICATION NUMBER: 08/485,243
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR APPLICATION NUMBER: 09/008,172
                                                                                                                                                                                                                  SOFTWARE: 1
SEQ ID NO 20
                                                                      Matches
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Publication No. US20030073140A1
                                                                                                       Query Match
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                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/09/557,796
CURRENT FILING DATE: 2000-04-25
PRIOR APPLICATION NUMBER: 09/172,952
PRIOR FILING DATE: 1998-10-14
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NUMBER OF SEQ ID NOS:
SOFTWARE: FastSEQ for
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TITLE OF INVENTION: Glucan-containing Compositions and Paper FILE REFERENCE: 0357CD
CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR PILING DATE: 1998-12-11
                                                                                                                                                                               LENGTH: 28
TYPE: PRT
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PRIOR APPLICATION NUMBER:
                                                                                                                                                                ORGANISM: YiaJ-Ec
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ORGANISM: streptococcus mutans
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169
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                                2 PSY--SFIRAHDSEVODLIRNII 22
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PDYVKSYWESHQHEIQPLTRNTI 191
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                                                                                      Score 44; DB
Pred. No. 40;
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Pred. No. 0.
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0.029;
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                                                                                                                                                             NAME/KEY: SITE
LOCATION: (340)
OTHER INFORMATION: Xaa equals any
NAME/KEY: SITE
LOCATION: (341)
OTHER INFORMATION: Xaa equals any
US-10-012-542-277
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Matches
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LENGTH: 1068
                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: Pa
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PRIOR FILING DATE: EARLIER FILING DATE: 1999-12-14
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR FILING DATE: 1998-06-16
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR FILING DATE: 1998-06-16
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PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR APPLICATION NUMBER: PRIOR APPLICATION NUMBER: PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR FILING DATE: 1998-06-16
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR FILING DATE: 1998-06-16
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APPLICANT: Caron, Marc G.
TITLE OF CONTROL Phosphoinositide 3-Kinase Mediated Inhibition of GPCRs
FILE REFERENCE: 033072-064
CURRENT APPLICATION NUMBER: US/10/101,235A
CURRENT FILING DATE: 2002-03-19
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CURRENT FILING DATE: 2001-12-12
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SOFTWARE: FastSEQ for Windows Version 4.0
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ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                  LOCATION: (16)
OTHER INFORMATION: Xaa equals any of the naturally occurring L-amino acids
                                                                                                                                                                                                                                                                                                                                             NAME/KEY: SITE
                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                     FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH: 347
                                                                                                   Local
103 HKYMRSHKAESSELVRN 119
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                                      4 YSFIRAHDSEVQDLIRN 20
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                                                                              Similarity 6; Conserv
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10. US20030044851A1
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                                                                              Score 43; DB Pred. No. 74; 7; Mismatches
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Pred. No.
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1.8e+02;
                                                                                                                                                                                naturally occurring
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                                                                                                                    Length 347
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PRIOR APPLICATION NUMBER: US 60/299,887
PRIOR APPLICATION NUMBER: US 60/299,887
PRIOR FILING DATE: 2001-06-21
PRIOR APPLICATION NUMBER: US 60/301,572
PRIOR APPLICATION NUMBER: US 60/306,501
PRIOR FILING DATE: 2001-07-18
PRIOR APPLICATION NUMBER: US 60/306,501
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US-10-177-293-470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: Streptomyces avermitilis US-10-156-761-11791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; Sequence 470, Application t
publication No. US200301241
; GENERAL INFORMATION:
APPLICANT: Lillie, James
APPLICANT: Glatt, Karen
; APPLICANT: Zhao, Xumei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-156-761-11791
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Publication No. US20030119018A1
GENERAL INFORMATION:
APPLICANT: OMURA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: IKEDA, HARUO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 11791
LENGTH: 568
TYPE: PRT
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Best Local Similarity
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APPLICANT:
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APPLICANT:
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CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
                                                                                                                                           TITLE OF INVENTION: COMPOSITIONS, KITS, A TITLE OF INVENTION: PREVENTION, AND THER FILE REFERENCE: MRI-038 CURRENT APPLICATION NUMBER: US/10/177,293 CURRENT FILING DATE: 2002-06-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
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APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
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Mills, Gordon B.
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Kamatkar, Shubhangi
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HORIKAWA, HIROSHI
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                                                                                                                                                                                                                                                                                                                   Bast Jr., Robert C.
Hortobagyi, Gabriel
                                                                                                                                                                                                                                                                                                                                                            Hoersch, Sebastian
Monahan, John
Meyers, Rachel E.
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Wang, Youzhen
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                                                                                                                                                                                                         PREVENTION, AND THERAPY OF BREAST CANCER
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Pred. No.
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PRIOR APPLICATION NUMBER: US 60/xxx,xxx;
PRIOR FILING DATE: 2002-05-14;
NUMBER OF SEQ ID NOS: 506;
SOFTWARE: FRASTSEQ for Windows Version 4.0;
SEQ ID NO 470;
LENGTH: 2541;
TYPE: PRT
ORGANISM: Homo sapiens
US-10-177-293-470
RESULT 15
US-09-815-242-12523
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US-09-815-242-5358
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SEQ ID NO 5358
LENCTH: 1213
TYPE: PRT
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                                                                                                                                                                        Query Match
Best Local
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Best Local Similarity 38.1%;
Matches 8; Conservative
                                                                                                                                                    Matches
                                                                                                                                                                                                                            ORGANISM: Staphylococcus aureus
-09-815-242-5358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Prokaryotes FILE REFERENCE: ELITRA.011A CURRENT APPLICATION UNMERS: US/09/815,242 CURRENT FILING DATE: 2001-03-21 PRIOR APPLICATION NUMBER: 60/191,078
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APPLICANT:
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PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR FILING DATE: 2001-09-25
PRIOR APPLICATION NUMBER: US 60/362,585
PRIOR FILING DATE: 2002-03-05
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                                                                                                                                                                                                                                                                                                                                                                                                                                                      OR APPLICATION NUMBER: 60/206,848
OR FILING DATE: 2000-05-23
OR APPLICATION NUMBER: 60/207,727
OR FILING DATE: 2000-05-26
OR APPLICATION NUMBER: 60/242,578
OR FILING DATE: 2000-10-23
OR FILING DATE: 2000-10-23
OR APPLICATION NUMBER: 60/253,625
                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE: 2000-11-27
APPLICATION NUMBER: 60/257,931
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                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: 2000-12-
                                                                       615 SFLRAIDNPLQDIYLVGLMRSVI 637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INFORMATION:
                                                                                                                                              37.7%;
il Similarity 43.5%;
10; Conservation
                                                                                                             5 SFIRAHDSEVQD-----LIRNII 22
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Zyskind, Judith W.
Wall, Daniel
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Yamamoto, Robert T.
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                                                                                                                                              Score 41.5; DB 9;
Pred. No. 5.4e+02;
6; Mismatches 2;
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Pred. No. 7.2e+02;
4; Mismatches
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Search completed: November 13, Job time: 28.7773 secs

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SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 12523
LENGTH: 1217
TYPE: PRT
ORGANISM: Staphylococcus aureus
US-09-815-242-12523
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PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR PILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/253,625
                                                                                  Matches
                                                                                                      Query Match
Best Local Similarity
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Patent No. US20020061569A1
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TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELICITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
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APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith |
APPLICANT: Wall, Daniel
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PRIOR FILING DATE: 2000-12-22
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615 SFLRAIDNPLQDIYLVGLMRSVI 637
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                                                                                  10; Conservative
                                      5 SFIRAHDSEVQD----LIRNII 22
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Zyskind, Judith W.
Wall, Daniel
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Xu, H. Howard
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                                                                                                    37.7%;
43.5%;
                                                                                  6; Mismatches
                                                                                                    Score 41.5; DB 9;
Pred. No. 5.5e+02;
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Result
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            Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed,
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DB seq length: 2000000000
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1: /cgm2 6/ptodata/2
2: /cgm2 6/ptodata/2
3: /cgm2 6/ptodata/2
4: /cgm2 6/ptodata/2
5: /cgm2 6/ptodata/2
6: /cgm2_6/ptodata/2
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Match
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107
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37.4
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Maximum Match 100%
Listing first 45 summaries
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/cgn2_6/ptodata/2/iaa/5B_COMB.pep:*
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Sequence 57, Appl Sequence 36, Appl Sequence 33, Appl Sequence 133, App Sequence 136, App Sequence 136, App Sequence 136, App Sequence 70, Appl Sequence 70, Appl Sequence 71, Appl Sequence 71, Appl Sequence 135, App
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Sequence 5511, Ap
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Best Local :
            TYPE: PRI
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US-09-144-925-3	US-08-685-992-3	US-09-144-925-25	US-09-144-925-4	US-08-685-992-25	85-992-	US-09-287-097-2	-08-647-960-	34-001C	-09-218-207-	38-907-	US-08-996-306-5	-09-218-207-	US-09-338-907-4	US-08-996-306-4	US-09-218-207-134	US-09-338-907-134	US-09-218-207-135
Sequence 3, App	Sequence 3, App	Sequence 25, Ap	Sequence 4, App	Sequence 25, Ap	Sequence 4, App.	e 2,	equence 8,	077,	`	Sequence 5, App.	(D (5 ;	equence 4,	e 4,	Sequence 4, Appl	e 134,	e 13	Sequence 135, A

ALIGNMENTS

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Sequence 4, Application US/09604957
Patent No. 6486314
GENERAL INFORMATION:
APPLICANT: VAN GEBL-SCHUTTEN, GERRIT
APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
APPLICANT: LEER, ROBERT-JAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; TYPE: PRT ; ORGANISM: Streptococcus mutans US-09-604-957-4
CURRENT APPLICATION NUMBER: US/09/008,172
CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 2
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 2
LENGTH: 1430
                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starch
TITLE OF INVENTION: Latexes in Paper Manufacture
                                                                                                                                                                                                                                                                                                           Sequence 2, Application US/09008172 Patent No. 6127602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 4
LENGTH: 545
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PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN FILE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
                                                                                                                                                                                          FILE REFERENCE: 0358D
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22; Conserv
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LUBBERT
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RESULT 4
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PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-
PRIOR APPLICATION NUMBER:
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EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
                                                                                                                                                                       PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                               FILE REFERENCE:
                                                                                                                                                                                                                                            APPLICANT: Nichols, Scott E. TITLE OF INVENTION: Glucan-c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: FastSEQ for Windows Version 3.0
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EARLIER FILING DATE: 1995-06-07
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CURRENT APPLICATION NUMBER: US/09/210,361
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APPLICATION NUMBER: 08/
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FILING DATE: 1995-06-07
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                                                                                                                                                                                                                                                                                                                                                                                                            574 MANYIFIRAHDSEVQTVIAKII 595
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Substitutes for Modified Starches
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                                                                                                      08/478,704
                                                                    09/009,620
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09/008,172
                               08/485,243
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Pred. No. 1.4e-10;
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; LENGTH: 1430
; TYPE: PRT
; ORGANISM: Streptococcus mutans
US-09-740-274-6
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US-08-793-824-2
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US-08-793-824-2
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Patent No.
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SEQ ID NO 6
                                                   Query Match
Best Local
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Best Local Similarity 100.0%;
Matches 22; Conservative 0
                                   Matches
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TELEX: 26547
INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
LENGTH: 1577 amino acids
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PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-0
PRIOR FILING DATE: 1995-0
PRIOR FILING DATE: 1995-0
PRIOR FILING DATE: 1998-0
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TITLE OF INVENTION: (
TITLE OF INVENTION: I
NUMBER OF SEQUENCES:
                                                                                                                               MOLECULE TYPE:
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION DATA: APPLICATION NUMBER: US,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ZIP: 2060
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                           TELECOMMUNICATION INFORMATION: TELEPHONE: 61 2 9957 5944
                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
APPLICATION NUMBER: AU PIFILING DATE: 24-AUG-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
ADDRESSEE: Griffith Hack & Co
STREET: Level B, 168 Walker Street
CITY: No. 5981838th Sydney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Giffard,
APPLICANT: Jacques,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: PatentIn Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                           FILING DATE: CLASSIFICATION:
                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                             TYPE: amino acid
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                                                                                                                                                                          STRANDEDNESS:
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                                   1 Similarity
17; Conserv
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   ANYIFIRAHDSEVQTVIAKII 22
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                                   Conservative
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                                                                                                                Streptococcus salivarius
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81.0%;
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Nicholas Anthony
Genetic Manipulation of Plants
Increase Stored Carbohydrates
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                                  Score 89; DB 2; DP Pred. No. 2.7e-07;
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Pred. No. 1.4e-10;
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US-09-007-999-2
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; TYPE: PRT
; ORGANIZM: Leuconostoc mesenteroides
US-09-604-957-5
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US-09-604-957-5
                                                                                                                                                                RESULT 8
           GENERAL INFORMATION:
APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Starches
TITLE OF INVENTION: Latexes in Paper Manufacture
FILE REFERENCE: 0357CR
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APPLICANT: Nichols, Scott E.
TITLE OF INVENTION: Substitutes for Modified Star
TITLE OF INVENTION: Latexes in Paper Manufacture
                                                                                                        Sequence 2, Application US/09210361 Patent No. 6284479
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LENGTH: 1475
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Best Local (
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CURRENT FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/478,704
EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 2
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CURRENT FILING DATE: 2000-06-28
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16; Conserv
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15; Conserv
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LEER, ROBERT-JAN
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NUMBER: US/09/210,361
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Pred. No.
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Pred. No. 0.00029;
2; Mismatches 3;
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SEQ ID NO 2
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Patent No. 6465203
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                                                                Matches
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Best Local Similarity
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NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version
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PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/
PRIOR FILING DATE: 1998-01-20
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CURRENT FILING DATE: 2000-12-19
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EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
EARLIER APPLICATION NUMBER: 08/482,711
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EARLIER
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EARLIER APPLICATION NUMBER: 08/485,243
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TYPE: PRT
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                                                                                                                                                              TYPE: PRT
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FILING DATE: 1995-06-07
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554 SYSFIRAHDSEVODLIADII 573
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                              NYIFIRAHDSEVQTVIAKII 22
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                                                                Conservative
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Pred. No. 0.00029;
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Pred. No. 0.00029;
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RESULT 10 US-09-210-361-4

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  Query Match 63.4
Best Local Similarity 70.4
Matches 14; Conservative
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LENGTH: 1375
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CURRENT APPLICATION NUMBER: US/09/210,361
CURRENT FILING DATE: 1998-12-11
EARLIER APPLICATION NUMBER: 09/007,999
EARLIER FILING DATE: 1998-01-16
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EARLIER FILING DATE: 1998-01-20
EARLIER APPLICATION NUMBER: 08/485,243
EARLIER FILING DATE: 1995-06-07
EARLIER APPLICATION NUMBER: 09/008,172
EARLIER FILING DATE: 1998-01-16
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
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EARLIER FILING DATE: 1995-06-07
NUMBER OF SEQ ID NOS: 6
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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EARLIER FILING DATE: 1995-06-07
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TITLE OF INVENTION: Latexes in Paper Manufacture
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PRIOR TILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/0
PRIOR FILING DATE: 1995-06-07
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                                                                                                   ORGANISM: streptococcus mutans
                                                                                                                                        LENGTH:
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                                                                                                                                                                                                              APPLICATION NUMBER: 08/4
FILING DATE: 1995-06-07
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FILING DATE: 1998-01-20
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70.0%;
                    63.6%;
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Pred. No. 0.0014;
2; Mismatches
Score 68; DB 4;
Pred. No. 0.0014;
2; Mismatches
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                                         DB 4; Length 1375;
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RESULT 14
US-09-604-957-7
; Sequence 7, Application US/09604957
; Patent No. 6486314
; GENERAL INFORMATION:
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US-09-499-203-2
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US-09-604-957-6
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                                                                                                                                                                                                                                                                                          SOFIMAL SOFT NO 2
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Patent No. 6570065
GENERAL INFORMATION:
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Best Local Similarity
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CURRENT PEPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
                                                                                                                                                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/09/499,203
CURRENT FILING DATE: 2000-02-08
NUMBER OF SEQ ID NOS: 54
                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: KOSSMANN, Jens
APPLICANT: WELSH, Thomas
APPLICANT: QUANZ, Martin
APPLICANT: KNUTH, Karola
TITLE OF INVENTION: Nucleic Acid Molecules Encoding Alternansucrase
FILE REFERENCE: 147-196P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
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                                                                                                                                                                                                                                                                                                                               SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                              LENGTH: 2057
TYPE: PRT
ORGANISM: Leuconostoc mesenteroides
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Pred. No. 1.2;
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Pred. No. 0.
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TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
CURRENT APPLICATION NUMBER: US/09/604,957
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 00201871.1
PRIOR TILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 7
LENGTH: 535
TYEB: PRT
ORGANISM: Lactobacillus reuteri
US-09-604-957-7
Search completed: November 13, 2003, 09:48:02
Job time : 15.2844 secs
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; TYPE: PRT
; CRGANIZM: Lactobacillus reuteri.
US-09-604-957-3
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APPLICANT: LEER, ROBERT-TAN
APPLICANT: LEER, ROBERT-TAN
TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASE AND NOVEL GLUCAN
FILE REFERENCE: BO 43388
CURRENT FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: 09201871.1
PRIOR APPLICATION NUMBER: 09201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 3
SEQ ID NO 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 3, Application US/09604957
Patent No. 6486314
GENERAL INFORMATION:
APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 46.7%; Score 50; DB 4; Length 535; Best Local Similarity 50.0%; Pred. No. 0.81; Matches 10; Conservative 2; Mismatches 8; Indels
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APPLICANT: DIJKHUIZEN, LUBBERT
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ROBERT-JAN
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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 2000000000
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Published Applications AA:*

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139.565 Million cell updates/sec
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Copyright (c) 1993 - 2003 Compugen Ltd.
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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40	40	40	40	40	42	44	50	50	53	68	72	86	107	107	Score
37.4	37.4	37.4	37.4	37.4	39.3	41.1	46.7	46.7	49.5	63.6	67.3	80.4	100.0	100.0	Query Match
349	349	349	349	67	327	583	1781	535	584	1375	1475	522	1430	545	Query Match Length
15	15	15	15	15	12	10	10	10	10	9	9	10	9	10	DB
US-10-270-710-57	. US-10-270-786-57	US-10-270-878-57	US-10-270-875-57	US-10-007-280A-214	US-10-032-585-7827	US-09-758-269-2	US-09-995-749A-2	US-09-995-749A-13	US-09-995-749A-12	US-09-740-274-4	US-09-740-274-2	US-09-995-749A-11	US-09-740-274-6	US-09-995-749A-10	HD
Sequence 57, Appl	Sequence 57, Appl	Sequence 57, Appl	Sequence 57, Appl	Sequence 214, App	Sequence 7827, Ap	Sequence 2, Appli	Sequence 2, Appli	Sequence 13, Appl	Sequence 12, Appl	Sequence 4, Appli	Sequence 2, Appli	Sequence 11, Appl	Sequence 6, Appli	Sequence 10, Appl	Description

RESULT 2 US-09-740-274-6 ; Sequence 6, Application US/09740274 ; Patent No. US20020031826A1

QY db	Query Match Best Local Matches 2	US-09-995-749A-10 US-09-995-749A-10 Sequence 10, Application US/ Sequence 10, Application US/ Patent NO. US20020155568A1 GENERAL INFORMATION: APPLICANT: DIJKHUIZEN, LUB APPLICANT: DIJKHUIZEN, LUB APPLICANT: LEER, ROBERT-10, APPLICANT: LEER, ROBERT-10, FILE REFERENCE: B043388-CIP CURRENT APPLICATION NUMBER: CURRENT FILING DATE: 2000-06- PRIOR APPLICATION NUMBER: 0 PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: 0 PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: 0 PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: E PRIOR PRIOR FILING DATE: 2000-05- PRIOR PR		11111111111111111111111111111111111111
1 MA 	N	5-749A-10 LOC 10, Applic. NO. US200201 L INFORMATION LOCANT: UAN GEE CANT: DIJKHU CANT: RAHAOU CANT: LEER, OF INVENTION REFERENCE: BO NT APPLICATION APPLICATION APPLICATION FILING DATE: FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING DATE: APPLICATION FILING SEQ ID N ARE: Patentin NO 10 NO 10 NO 10 NO 10 NO 15		444444444 うりょう うりょう くりょう しょう ちょう うょう しょう りゅう りゅう りゅう りゅう りゅう りゅう りゅう りゅう りゅう りゅ
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DSEVQ	100 100 ive	ication US/099957 00155568A1 OON: CON: CON: CON: COUT. HAKIM COUT. HAKIM COUT. HAKIM COUT. HAKIM CON: NOVEL GLUCOSY E043388-CIP FION NUMBER: E043388-CIP E043388-CIP E043388-CIP E043388-CIP E043388-CIP E043388-CIP E043388-CIP E043388-CIP E043388-CIP E04358-E-2000-06-28 NN NUMBER: E0400-06-28 E1 2000-06-28 DN NUMBER: E0400-06-28 DN NUMBER: E0400-05-25 DNOS: 19 ILIN Ver: 2.1		33449 3449 3449 3449 3477 3477 3477 3477
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AKII 22 AKII 175	Score 107; DB 10; Pred. No. 1.6e-09; 0; Mismatches 0;	ion US/09995749A 5568A1 SCHUTTEN, GERRITDINA HENDRIKA HAKIM BERT JAN MOVEL GLUCOSYLTRANSFERASES 188-CIP NUMBER: US/09/995,749A 2001-11-29 MMBER: 09/604,957 1000-06-28 MBER: EPO 00201871.1 1000-05-25 18: 19 fer. 2.1	ALIGNMENTS	US-10-270-859-57 US-10-270-846-57 US-10-270-875-36 US-10-270-878-36 US-10-270-786-36 US-10-270-786-36 US-10-270-846-36 US-10-270-846-36 US-09-864-761-41675 US-09-864-761-41675 US-09-853-526-13 US-09-901-484A-13 US-09-853-526-13 US-09-915-484A-70 US-09-853-526-13 US-09-853-526-13 US-09-853-526-13 US-09-853-526-13 US-09-853-526-13 US-09-915-484A-13 US-09-853-526-13 US-09-915-882-79 US-09-915-582-79 US-09-853-526-4 US-09-853-526-7
	Length 545; Indels 0;			Sequence Sequence
	Gaps			66 7, 799, 9111111111111111111111111111111
	0;			Appl Appl Appl Appl Appl Appl Appl Appl

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LENGTH: 1430
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                                                                                                                                                SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 11
SEQ ID NO 11
SEQ TPS 522
TYPE: PRT
ORGANISM: Leuconostoc mesenteroides
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Best Local Similarity
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                                                                                 Query Match
Best Local
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CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
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PRIOR FILING DATE: 1995-C
PRIOR APPLICATION NUMBER:
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TITLE OF INVENTION: Glucan-c
FILE REFERENCE: 0357CRD
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                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: NOVEL GLUCOSYLTRANSFERASES FILE REFERENCE: BO43388-CIP CURRENT APPLICATION NUMBER: US/09/995,749A CURRENT FILING DATE: 2001-11-29
                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
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FILING DATE: 1995-06-07
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 148 NYSFVRAHDSEVQTVIAQIV 167
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                               3 NYIFIRAHDSEVQTVIAKII 22
                                                                                 Similarity
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LEER, ROBERT-JAN
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                                                                   Conservative
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Pred. No.
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Pred. No. 4.8e-09;
; Mismatches 0;
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                                                                                                    DB 10; Length 522;
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RESULT 4 US-09-740-274-2

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US-09-740-274-2
                                                       ; TYPE: PRT ; ORGANISM: streptococcus mutans US-09-740-274-4
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APPLICANT: Nichols
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SEQ ID NO 2
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CURRENT FILING DATE: 2000-12-19
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR FILING DATE: 1998-01-16
PRIOR FILING DATE: 1998-01-16
Query Match
Best Local Similarity
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TITLE OF INVENTION: Glucan-c
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PRIOR APPLICATION NUMBER:
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PRIOR APPLICATION NUMBER: 08/4
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PRIOR APPLICATION NUMBER: 08/485,243
PRIOR FILING DATE: 1995-06-07
PRIOR APPLICATION NUMBER: 09/008,172
PRIOR TILING DATE: 1998-01-16
PRIOR APPLICATION NUMBER: 08/482,711
PRIOR FILING DATE: 1995-06-07
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CURRENT APPLICATION NUMBER: US/09/740,274
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: 09/210,361
PRIOR FILING DATE: 1998-12-11
PRIOR APPLICATION NUMBER: 09/007,999
PRIOR APPLICATION NUMBER: 09/007,999
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PRIOR APPLICATION NUMBER: 09/
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PRIOR APPLICATION NUMBER:
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PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1995-0
PRIOR APPLICATION NUMBER:
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TITLE OF INVENTION: Glucan-containing Compositions and Paper
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ORGANISM: Streptococcus mutans
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SOFTWARE: FastSEQ for Windows Version 3.0
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les 15; Conserv
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FILING DATE: 1995-06-07
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75.0%;
63.6%;
70.0%;
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Score 68;
Pred. No.
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DB 9;
0.015;
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PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR FILING DATE: 2000-05-25
PRIOR FILING DATE: 2000-05-25
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 12
LENGTH: 584
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Best Local (
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APPLICANT: VAN GEEL-SCHUTTEN,
APPLICANT: DIJKHUIZEN, LUBBER
APPLICANT: RAHAOUI, HAKIM
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SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 13
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                                                                  Matches
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PRIOR APPLICATION NUMBER: 09/604,957
PRIOR FILING DATE: 2000-06-28
PRIOR APPLICATION NUMBER: EPO 00201871.1
PRIOR FILING DATE: 2000-05-25
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APPLICANT: DIJKHUIZEN, LUBBERT
APPLICANT: RAHAOUI, HAKIM
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                                                                                                                                                   LENGTH: 535
TYPE: PRT
ORGANISM: Lactobacillus reuteri
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                                                                                 Local Similarity
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146 NYSEVRAHDNNSQDQIQNAI 165
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RAHAOUI, HAKIM
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Pred. No.
                                                                                  Score 50; I
Pred. No. 5.
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US-10-032-585-7827
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                                                                                                                                           ; TYPE: PRT ; ORGANISM: Arabidopsis thaliana US-09-758-269-2
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                                                                    Query Match
Best Local S
Matches 9
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Matches
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Patent No. US20020104120A1
GENERAL INFORMATION:
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LENGTH: 583
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILE REFERENCE: BO43388-CIP
CURRENT APPLICATION NUMBER: US/09/995,749A
CURRENT FILING DATE: 2001-11-29
                                                                                                                                                                                                                                 PRIOR FILING DATE: 2001-01-11
PRIOR APPLICATION NUMBER: JP 2000-010056
PRIOR FILING DATE: 2000-01-13
NUMBER OF SEQ ID NOS: 33
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: JP 2001-003476 PRIOR FILING DATE: 2001-01-11
                                                                                                                                                                                                                                                                                                                                              FILE REFERENCE: 3914-3
CURRENT APPLICATION NUMBER: US/09/758,269
CURRENT FILING DATE: 2001-01-12
                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: IUCHI, SATOSHI
APPLICANT: KOBAYASHI, MASATOMO
APPLICANT: SHINOZAKI, KAZUO
TITLE OF INVENTION: TRANSGENIC PLANTS CARRYING NEOXANTHIN
TITLE OF INVENTION: CLEAVAGE ENZYME GENE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 19
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: EPO 00201871.1 PRIOR FILING DATE: 2000-05-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 09/604,957 PRIOR FILING DATE: 2000-06-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: VAN GEEL-SCHUTTEN, GERRITDINA HENDRIKA
APPLICANT: DIJKHUIZEN, LUBBERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ENGTH: 1781
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530 YIFCHVHDEETKTSELQII 548
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                                   4 YIFIRAHDSEVQTVIAKII 22
                                                                     Similarity
9; Conserv
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LEER, ROBERT-JAN
                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          46.7%;
50.0%;
                                                                                        41.18;
47.48;
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Pred. No.
                                                                                        Score 44;
Pred. No.
                                                                           Mismatches
                                                                                            DB 10;
58;
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APPLICANT: Charles, Boone

APPLICANT: Howard, Bussey

FILE REFERENCE: 10182-005-999

CURRENT APPLICATION NUMBER: US/10/032,585

CURRENT FILING DATE: 2001-12-20

NUMBER OF SEQ ID NOS: 8000

SOFTWARE: Patentin version 3.1

SEQ ID NO 7827

LENGTH: 327

TYPE: PRT

ORGANT
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Best Local Similarity
Whiches 8; Conserve
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US-10-032-585-7827
                                                                                                                                                                                               US-10-270-875-57
                                                                                                                                                                                                                  RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                         US-10-007-280A-214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 214, Applic Publication No. US20 GENERAL INFORMATION:
                                                                                                                                                               Sequence 57, Application US/10270875 Publication No. US20030082741A1
                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn version 3.1 SEQ ID NO 214
                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/10/007,280A
CURRENT FILING DATE: 2001-11-07
PRIOR APPLICATION NUMBER: US 60/246,640
PRIOR FILING DATE: 2000-11-08
NUMBER OF SEQ ID NOS: 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Chenghua, Liu
TITLE OF INVENTION: Compositions and Methods Relating to Ovary Specific Genes and ProFILE REFERENCE: DEX-0257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Sun, Yongming
APPLICANT: Recipon, Herve
APPLICANT: Salceda, Susana
            APPLICANT: Arnthor Aevarsson
APPLICANT: Jakob K. Kristjansson
TITLE OF INVENTION: Bacteriophage RM378 of
TITLE OF INVENTION: Host Organism
FILE REFERENCE: 2739.1001-001
                                                                                            APPLICANT: Sigridur Hjorleifsdotter
APPLICANT: Gudmundur O. Hreggvidsson
APPLICANT: Olafur H. Fridjonsson
CURRENT APPLICATION NUMBER: US/10/270,875
                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: PRT
ORGANISM: Homo sapien
                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH: 67
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D. US20030059784A1
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44.4%;
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40.0%;
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Pred. No.
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Pred. No.
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                                                 Thermophilic
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Query Match
Best Local Similarity
"htches 7; Conserva
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                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
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US-10-270-878-57
                                                                                                                                                                                                                                                                                                                  US-10-270-786-57
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SEQ ID NO 57
LENGIH: 349
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Publication No.
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PRIOR APPLICATION NUMBER: US/09/585,858
PRIOR FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: 60/137,120
PRIOR FILING DATE: 1999-06-02
APPLICANT: Gudmundur O. Hreggvidsson
APPLICANT: Olafur H. Fridjonsson
APPLICANT: Arnthor Aevarsson
APPLICANT: Jakob K. Kristjansson
TITLS OF INVENTION: Bacteriophage RM378 of a Thermophilic
TITLE OF INVENTION: Host Organism
FILE REFERENCE: 2739.1001-001
CURRENT APPLICATION NUMBER: US/10/270,786
CURRENT FILING DATE: 2002-10-11
PRIOR APPLICATION NUMBER: US/09/585,858
PRIOR FILING DATE: 2000-12-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Arnthor Aevarsson
APPLICANT: Jakob K. Kristjansson
TITLE OF INVENTION: Bacteriophage RM378 of a Thermophilic
TITLE OF INVENTION: Host Organism
FILE REFERENCE: 2739.1001-001
CURRENT APPLICATION NUMBER: US/10/270,878
CURRENT FILING DATE: 2002-10-11
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PRIOR FILING DATE: 2000-12-18
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                                                                                                                                                                                                         APPLICANT: Sigridur Hjorleifsdotter
APPLICANT: Gudmundur O. Hreggvidsso
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Olafur H. Fridjonsson
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Pred. No. 1.5e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 40; DB 15; Pred. No. 1.5e+02; 5; Mismatches 7;
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APPLICANT: Arnthor Aevarsson

APPLICANT: Jakob K. Kristjansson

TITLE OF INVENTION: Bacteriophage RM378 of a Thermophilic

FILE REFERENCE: 2739.1001-001

CURRENT APPLICATION NUMBER: US/10/270,710

CURRENT APPLICATION NUMBER: US/9585,858

PRIOR APPLICATION NUMBER: US/9585,858

PRIOR FILING DATE: 2000-12-18

PRIOR APPLICATION NUMBER: US/9785,858

PRIOR FILING DATE: 1999-06-02

NUMBER OF SEQ ID NOS: 73

SOFTWARE: FASESEQ for Windows Version 4.0

SEQ ID NO 57

LENGTH: 349

TYPE: PRT

ORGANISM: Bacteriophage RM378

US-10-270-710-57
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US-10-270-710-57
/ Sequence 57, Application US/10270710
/ Publication No. US20030092128A1
/ GENERAL INFORMATION:
/ APPLICANT: Sigridur Hjorleifsdotter
/ APPLICANT: Gldmundur O. Hreggvidsson
/ APPLICANT: Olafur H. Fridjonsson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; PRIOR APPLICATION NUMBER: 60/137,120
; PRIOR FILING DATE: 1999-06-02
; NUMBER OF SEQ ID NOS: 73
; SOFTMARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 349
; TYPE: PRT
; ORGANISM: Bacteriophage RM378
US-10-270-786-57
Search completed: November 13, 2003, 10:29:05 Job time: 29.7773 secs
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37.4%; Score 40; DB 15; Length 349;
Best Local Similarity 36.8%; Pred. No. 1.5e+02;
Matches 7; Conservative 5; Mismatches 7; Indels
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                                                                                         175 YLLIRSHIHEVNVISDKLL 193
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Database
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Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB seq length: 0
Maximum DB seq length: 200000000
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                                                      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                               A_Geneseq_19Jun03:*

1: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:*
2: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
3: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
3: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
4: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
6: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1986.DAT:*
6: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1988.DAT:*
7: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1989.DAT:*
9: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1989.DAT:*
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10: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1990.DAT:*
11: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1991.DAT:*
12: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1992.DAT:*
13: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1993.DAT:*
14: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1994.DAT:*
15: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1995.DAT:*
16: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
17: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
18: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
19: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
20: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
21: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
22: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
23: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:*
24: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:*
24: /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:*
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1107863 seqs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      November 13, 2003, 09:31:40; Search time 40.3507 Seconds (without alignments) 86.541 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MANYIFIRAHDSEVQTVIAKII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-290-049A-16
107
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SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22
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9	В	7	a	ហ	4	w	N	_	Result
86	89	89	101	101	101	101	107	107	Score
80.4	83.2	83.2	94.4	94.4	94.4	94.4	100.0	100.0	Query Match
1527	2835	1577	1430	1430	1430	1430	1430	1430	Query Match Length DB
23	23	17	23	23	23	23	23	23	BE
AAU80055	ABB98574	AAR91047	AAU98045	AAU98044	AAU98042	AAU98041	AAU98043	AAU98029	ID
Leuconostoc mesent	Dextran saccharase							S. mutans gluccsvl	Description

4. TÜ	44	43	42	41	40	39	ω 8	37	36	ω U	4	ω ω	32	31	30	29	28	27	26	25	24	23	22	21	20	9	18	17	16	15	14	13	12	; <u>-</u>	10	
44	44	44		45	45	46	46.5	47	50	53	ហ	60	64	67	67	67	ტ მ	6 8	68	68	68	70	0	72	72	72	72	72	72	78	78	78	84	84	84	
41.1	41.1	41.1	41.1	42.1	•				46.7			•												67.3						•		•	•	•	78.5	
425	423	336	282	665	437	188	966	474	1781	2057	15	15	1592	1476	1017	15	1375	1375	15	15	15	15	15	1475	1475	1475	1475	1475	1475	1475	47	1475	47	1475	47	
21	21	21	21	22	23	23	22	22	23	21	23	23	14	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	
AAG27316	AAG27317	AAG49579	2731		94	ABP65773	4	493	4	AAB10667	ABB98651	ABB98650	AAR32925	AAU79284	AAU79285	ABB98652	AAU79288	AAU98028	ABB98655	ABB98654	ABB98653	ABB98657	ABB98579	AAU98040	AAU98039	AAU98033	AAU98031	AAU98030	AAU98027	AAU98035	AAU98034	803	AAU98038	AAU98037	AAU98036	
Arabidopsis thalia	Arabidopsis thalia	Arabidopsis thalia	Arabidopsis thalia	Drosophila melanog	Streptococcus polv	Bifidobacterium lo	Drosophila melanog	Drosophila melanoq	ctobacillus reu	L. mesenteroides a	Dextrane-saccharas	Dextrane-saccharas	—	mut	ccus mut	extrane-sacc	treptoco	s glucosy	Dextrane-saccharas	Dextrane-saccharas	-sacchara	1	Dextrane saccharas		. mutans	. mutans	•	. mutans	. mutans	. mutans q	. mutans qlucosy	. mutans gluc	. mutans GTFB mu	. mutans	S. mutans glucosyl	

ALIGNMENTS

XX PA	X	PR	PR	PR	PR	PR	PR	PR	X	Ρ̈́́́́	×	B	×	PN	×	SO	×	₹	¥	¥	×	DE	×	ij	×	ΑC	×	IJ	AAUS	RES
(NICH/) NICHOLS S E.				16-JAN-1998; 98US-0007999.			07-JUN-1995; 95US-0478704.	11-DEC-1998; 98US-0210361.		19-DEC-2000; 2000US-0740274.		14-MAR-2002		US2002031826-A1.		Streptococcus mutans.		.e.	qlucan: starch: 1	Glucosyltransferase; GTFD; transgenic plant; paper sizing:		S. mutans glucosyltransferase GTFD.		27-AUG-2002 (first entry)		AAU98029;		AAU98029 standard; Protein: 1430 AA	AAU98029	TIT 1

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RESULT 2
AAU98043
ID AAUS
XX
AC AAUS
AC AAUS
XX
DT 27-4
XX
DE S. n
XX
KW Gluc
KW Gluc
KW coat
KW amyl
XX
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CC (GTF) B polypeptide having changes at position from 1448V, D457N, D557T, D571K/K1014T, D457N/D57T, D457N/D57TK, D567T/D57TK, X014T, D457N/D57TK, D567T/D57TK, X014T, D457N/D57TK, D567T/D57TK, X014T, D457N/D57TK, D567T/D57TK, X014T, D457N/D57TK, D567T/D57TK/K1014T, I448V/D457N/D567T/D57TK/K779Q/K1014T, CC 1457T/D57TK/K779Q/K1014T, CC 145TT/M57TS9BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included are a glucan produced by the GTF mutant, CC 145TT/M59BE. Also included a glucan produced in a plant transformed composition comprising the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line cc deficient in starch biosynthesis, transformed with a gene encoding a glucan produced with a gene encoding a glucan produced with a gene encoding a composition of paper sizing/coating agent). The vector is useful cfor producing a glucan produce the glucan in the comprises transforming a glucan produced by GTF, which transforming a glucan produced in the amyloplast of potato or the vacuole of sugar beet. CC clucans are useful as substitutes for and additions to modified starch composition are useful as substitutes for and additions to modified starch composition and latexes in paper manufacture. Unlike prior art techniques, which cc and latexes in paper manufacture will be produced by GTF, which utilises discount of the paper discount of the p
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                           Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;

    mutans glucosyltransferase

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                     27-AUG-2002
                                                                                                                                                                                                                                                      AAU98043 standard; Protein; 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; Page 38-42; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                              574
                                                                                                                                                                                                                                                                                                                                                                                                     1 MANYIFIRAHDSEVQTVIAKII 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABK52940.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1430 AA
                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%;
                                         glucan; starch; lat
paper manufacture;
                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 107; DB 23;
Pred. No. 4.7e-10;
                                                                                                                           GTFD mutant N471D.
                                                                                                                                                                                                                                                                                                                                                           595
                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                            mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 1430;
                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                       11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
                                                                                                                                                                                                                                      19-DEC-2000;
                                                                                                                                                                                  WPI; 2002-414332/44.
                                                                                                                                                                                                                                              14-MAR-2002.
                                                                                                                                                                                                                                                     US2002031826-A1
                                                                                                                                                                                                                                                                 Misc-difference 471
                                                                                                                                                                                                                                                                             Synthetic
                                                                                                                                                                                                                                                                                Streptococcus mutans
                                                                                                                                                                                                 (NICH/) NICHOLS
                                                                                                                                                                                                                                      2000US-0740274
                                                                                                                                                                                                        98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                 Ø
                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                             /note= "Wild-type Asn
                                                                                                                                                                                                                                                             substituted by
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Glucosyltransferase B or D protein useful for producing a glucan uses substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -

Claim 36; Page -; 44pp; English.

conanges at positions from 1889, 1889%, NA/LD, NA/LD, 1889, and considered polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a conting composition comprising the syression cassette, host cell coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition comprising a glucan produced in a plant transformed coating composition the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan in a plant. The western a latex, the glucan is trarch biosynthesis, transformed with a gene encoding a glucosyltransferase B or Denzyme, wild-type or mutant and a paper comprising the glucan in a plant. The method comprises transforming a glucan in a plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant and inducing expression of the colorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beet. Comprises in paper manufacture. Unlike prior art techniques, which require input materials that produce db gffy, which utilises biologically produced input materials, is more cost-effective and convironmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step.

The present sequence represents a GTFD mutant of the invention. But was created by the indexer using the GTFD sequence appearing as AAU98029 and the information in claim 36.

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RESULT 3
AAU98041
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                     (GTF) B polypeptide having changes at position from I448V, D457N, D5677, K1014T, D457N/D567T, D457N/D571K, D5677/D571K, D457N/D567T, D457N/D57TK, D5677/D571K, D457N/D567T, D57TK/K1014T, J448V/D457N/D567T, D57TK/K779Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, M471D, T589D, and M77D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polynucleotide which encodes P1 or P2, or its complementary polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to introduced with the vector, an expression cassette comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the
                                                                                                                                                                                                                                                                                                                                                                                                         07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex,
                                                                                                                                                                                                                                                          Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                               Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                        WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                    Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11-DEC-1998;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US2002031826-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S. mutans
                                                                                                                                                                                                                                                                                                                                                                                 (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU98041 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                   invention an isolated protein comprising
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     574
                                                                                                                                                                                                                                                                                                                                                    SE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MANYIFIRAHDSEVOTVIAKII 595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MANYIFIRAHDSEVQTVIAKII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        glucosyltransferase
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000US-0740274.
                                                                                                                                                                                                                                                                                                                                                                                                       95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98US-0210361.
95US-0478704.
                                                                                                                                                                                                                                                                                                                                                                              SE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          note= "Wild-type Thr substituted by Asp'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTFD mutant T589D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 107; DB 23;
Pred. No. 4.7e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                  a glucosyltransferase
on from 1448V, D457N,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 1430;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                          useful
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RESULT 4
AAU98042
В
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    thermoplastic molecule or their combinations or glucan and starch where the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a comprising the glucan in a plant. The method comprises transforming a conditions to produce a regenerated plant and inducing expression of the plant cell with the vector, growing the plant cell under plant growing conditions to produce a regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and conformed in the amyloplast of potato or the vacuole of sugar beet. Clucans are useful as substitutes for and additions to modified starch is produced in the amyloplast of potato or the vacuole of sugar beet. Clucans are useful as substitutes for and additions to modified starch can distression that produce chemical effluents, paper considered input materials that produced by GTF, which utilises biologically produced input materials, is more cost-effective and convict or the present sequence is not shown in the specification but was created by the indexer using the GTFD sequence appearing as AAU98029 and the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                       11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                               19-DEC-2000;
                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                              14-MAR-2002
                                                                                                                                                                                                                              US2002031826-A1
                                                                                                                                                                                                                                                                                                                       Synthetic
                                                                                                                                                                                                                                                                                                                                      Streptococcus

    mutans glucosyltransferase

                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU98042;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAU98042 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
            (NICH/) NICHOLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     574 MANYIFIRAHDSEVQDVIAKII 595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MANYIFIRAHDSEVOTVIAKII 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                               2000US-0740274
                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry
                                                     98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
95US-0485243.
98US-0007999.
98US-0008172.
                                                                                                                                                                                                                                                                                                                                      mutans
                                          98US-
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                                                                                                                                                                                                                                                                        Location/Qualifiers 589
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                                                                                                                                                                                                                                                      /note= "Wild-type Thr substituted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Protein; 1430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  94.4%;
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Pred. No. 5.7e-09;
"" wismatches 1;
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                                                                                                                                                                                                                                                                                                                                                                                                                               GTFD mutant
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AAU98044
ID AAU9
XX AAU9
AC AAU9
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XX AU9
XX AU9
XX Gluc
XX Gluc
XX Gluc
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CC (GTP) B polypeptide having changes at position from 1448V, D457N, CC D567T, XX014T, D457N/D567T, D457N/D571K, D567T/D571K, XX014T, D457N/D567T, D457N/D57TK, D567T/D571K, XX014T, D457N/D567T, D457N/D57TK, D567T/D571K, XX014T, D457N/D567T, D457N/D57TK, D567T/D571K, XX014T, D457N/D57TK, D567T/D571K, XX014T, D457N/D57TK, D567T/D571K, XX014T, D457N/D57DTK, X2014T, D457N/D57
                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
          Glucosyltransferase; GTFD; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule;
                                                                         S. mutans glucosyltransferase GTFD mutant N471D/T589D.
                                                                                                                     27-AUG-2002
                                                                                                                                                                                               AAU98044 standard; Protein; 1430 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                         1 MANYIFIRAHDSEVQTVIAKII 22
                                                                                                                                                                                                                                                                                                                                                                                    21;
                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                  MANYIFIRAHDSEVQEVIAKII 595
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                                                                                                                     (first
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                                                                                                                   entry)
                                                                                                                                                                                                                                                                                                                                                                                                 94.4%;
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5.7e-09;
les 1;
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07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
20-JAN-1998;
                                                                                          11-DEC-1998;
07-JUN-1995;
                                                                                                                                  19-DEC-2000;
                                                                                                                                                           14-MAR-2002
                                                                                                                                                                                     US2002031826-A1
                                                                                                                                                                                                                               Misc-difference
                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                 Synthetic
                                                                                                                                                                                                                                                                                                             Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                 amyloplast; vacuole; paper manufacture; mutant; mutein.
(NICH/)
NICHOLS
                                                                                                                                2000US-0740274
                        95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
                                                                                          98US-0210361
95US-0478704
ഗ
                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                               589
                                                                                                                                                                                                              /note= "Wild-type Thr substituted by Asp"
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                                                                                                                                                                                                                                          substituted
                                                                                                                                                                                                                                       Λq
                                                                                                                                                                                                                                       Asp"
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Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -

laim 36; Page -; 44pp; English

The invention an isolated protein comprising a glucosyltransferase (CGTF) B polypeptide having changes at position from 1448V, D457N, D567T, D571K/K1014T, T448V/D457N/D571K, D567T/D571K, CC 1567A/K170A/X171A, and K779Q or a GTF D polypeptide having changes at positions from T599D, T599B, M471D/T599D, and K797Q or a GTF D polypeptide having CC Anisolated polynucleotide which encodes P1 or P2, or its complementary CC an isolated polynucleotide which encodes P1 or P2, or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, and expression cassette, host cell introduced with the vector, a transgenic plant comprising the polynucleotide operably linked to a CC promoter, a vector comprising the expression cassette, host cell introduced with the vector, a transgenic plant comprising the CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed CC with a gene encoding the mutant GTF, wild type or, starch, a latex, thermoplastic molecule or their combinations or glucan and starch where the plucan is produced in the amyloplast and/or vacuole or a maize line CC deficient in starch biosynthesis, transformed with a gene encoding a GLUCAN paper sizing/coating agent). The vector is useful comprising the glucan in a plant. The method comprises transforming a CC plant cell with the vector, growing the plant cell under plant growing to polynucleotide for a time sufficient to produce a transformed CC ribucomyllas binding protein to produce a transit sequence from the spouchest and inducing expression of the polynucleotide for a time sufficient to produce a transit sequence from the spouchest and paper manufacture. Unlike pilor art techniques, which the spouche of the polynucleotide for a time sufficient to produce a transit sequence from the spouchest are sufficient to produce a transit sequence from the spouchest plant and glucan in the spouchest plant and glucan in the spouchest plant and glucan in the sp

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RESULT 6
AAU98045
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Best Local
  The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from 1448V, D457N, D567T, K1014T, D457N/D567T, D457N/D57TK, D567T/D57TK, D567T/D57TK/K1014T, 1448V/D457N/D567T/D57TK/K779D57TK, D567T/D57TK/K1014T, 1448V/D457N/D567T/D57TK/K779D67TA, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and N471D/T589E. Also included are a glucan produced by the GTF mutant, an isolated polymucleotide which encodes P1 or P2, or its complemen polymucleotide, a ribonucleic acid sequence encoding the GTF mutant
                                                                                                                                                                                                                                                                                        Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                      Claim 36;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11-DEC-1998;
07-JUN-1995;
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16-JAN-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glucosyltransferase; GTFD; transgenic plant; coating composition; glucan; starch; latex; t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (NICH/)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAU98045 standard; Protein; 1430
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created by the indexer using t
the information in claim 36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                574 MANYIFIRAHDSEVODVIAKII 595
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                                                                                                                                                                                                                                                                                                                                                                                                                                                         SE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NICHOLS
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                                                                                                                                                                                                                                                 Page -; 44pp; English.
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95US-0482711.
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Pred. No. 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTFD mutant N471D/T589E.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    c plant; paper sizing;
latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mutant; mutein.
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.7e-09;
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encoding
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the GTF mutant.
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FINANCE PRODUCT OF THE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 7
AAR91047
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cc an expression cassette comprising the polynucleotide operably linked to a comproduce, a vector comprising the expression cassette, host cell cc introduced with the vector, a transgenic plant comprising the coexist coexist coexistic composition comprising a glucan produced in a plant transformed coexistic composition comprising a glucan produced in a plant transformed coexistic composition comprising a glucan produced in a plant transformed thempelastic molecule or their combinations or glucan and starch where cell the glucan is produced in the amyloplast and/or vacuole or a maize line comprising the glucan (paper sizing/coating agent). The vector is useful for producing a glucan in a plant. The method comprises transforming a comprising the glucan in a plant. The method comprises transforming a conditions to produce a regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from conditions to produce a regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from conditions biphosphate carboxylase small subunit, waxy, brittle-1 and conditions are useful as substitutes for and additions to modified starch conditions are useful as substitutes for and additions to modified starch conditions to main a paper manufacture. Unlike prior art techniques, which conditions to modified starch conditions.

CC properties and impart manufacture. Unlike prior art techniques, which conditions the produced of the vacuole of sugar beet. CC manufacture utilises to form the vacuole cost-effective and comprised to the produce of the prior cost-effective and conditions to the produce of the prior cost-effective and conditions t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alpha-D-glucosyltransferase; primer-independent; soluble glucan; sucrose; transgenic plant; cloning; Escherichia coli; phage lambda-Cl3; vector; plasmid pGSG501; plasmid pGSG502; gene transfer; crop improvement; storage carbohydrate; pasture; feedstuff; senescence; dextran; binder; food; pharmaceutical.
                                                         (GIFF/)
(JACQ/)
(SIMP/)
                                                                                                                                                                                               24-AUG-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alpha-D-glucosyltransferase.
                                                                                                                                                                                                                                                                    24-AUG-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus salivarius strain ATCC 25975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22-MAY-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAR91047
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Note:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  properties and impart gloss to the paper during coating step. The present sequence represents a GTFD mutant of the invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the information in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       574 MANYIFIRAHDSEVQEVIAKII 595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present sequence is not shown in the specification but reated by the indexer using the GTFD sequence appearing as AAU98029 he information in claim 36.
                                                         GIFFARD
JACQUES
SIMPSON
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MANYIFIRAHDSEVOTVIAKII 22
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Pred. No. 5.
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.7e-09;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CC Streptococcus salivarius. The enzyme is primer-independent, and CC produces soluble glucan from sucrose. A gene encoding the enzyme CC may be cloned and expressed in Escherichia coli using a subclone CC phage lambda-Cl3, e.g. plasmid pGSG501 or plasmid pGSG502. The CC DNA may also be expressed in a transgenic plant, to improve the CC contains low levels, or to prevent degradation of stored carbohydrate CC contains low levels, or to prevent degradation of stored carbohydrate CC during plant senescence. Dextran may be isolated from the plant, for use as a food binder or pharmaceutical additive. Primer independence CC ensures that the enzyme will be functional in plants. The glucan is poorly degraded in plants but easily degraded by bacteria in the rumen CC x
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
            Peptide
                                            Peptide
                                                                                                                                                                                                                                                                          DSR-E; glycosyl transferase; cytostatic; dermatological; antiseborrheic; microflora regulation; intestinal transit; mineral assimilation; colon cancer; acne; dandruff; body odour.
                                                                              Peptide
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N-PSDB; AAT13139.
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                                                                                                                                                                                                                                                                 Leuconostoc
                                                                                                                                                                                                                                                                                                                                              Dextran saccharase,
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                                                                                                                                                                                                                                                                                                                                                                                                                ABB98574 standard; protein; 2835
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ty - retain higher levels of stored carbohydrate(s) in a form
y digestible by ruminants
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Page 16-20; 31pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANYIFVRAHDSEVQAVLANII 680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1577
                                                                                                                                                                                                                                                              mesenteroides NRRL B-1299
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                                                      /label= SEQ_ID_9
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/note= "This sequence
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/note= "This sequence
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/note= "This sequence is
                                                                                                                                                                                           /label= Mature_protein
                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                  /label= Signal_peptide
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Pred. No.
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Query Match
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Matches 18
                                                                                                                                                                   branches from sucrose, p-nitrophenyl-alpha-D-glucopyranoside, alpha-fluoroglucose, alpha-D-glucopyranoside or alpha-D-galactopyranosyl-sucrose. The dextran saccharase is useful in prebiotic, pharmaceutical or cosmetic compositions. The dextrans and related compounds having alpha(1-2) bonds, produced using DSR-E, may be involved in signalling/cellular recognition processes in vivo (specifically in regulation of microflora in the intestines or on the skin); and are potentially useful for improving intestinal transit, increasing assimilation of minerals (e.g. calcium and/or magnesium), preventing cancer of the colon and combating skin problems such as acne, and the colon and combating skin problems such as acne,
                                                                                                                            Sequence
                                                                                                                                                           preventing ca
                                                                                                                                                                                                                                                                                                                                  The present sequence is a novel dextran saccharase, DSR-E, 1 Leuconostoc mesenteroides NRRL B-1299. The saccharase has given transferage activity suitable for producing dextrans having
                                                                                                                                                                                                                                                                                                                                                                                                                                   New glycosyl transferase enzymes, containing glucan bonding and catalytic domains and producing alpha-(1-2) branched dextrans, in probiotic, pharmaceutical or cosmetic compositions -
                                                                                                                                                                                                                                                                                                                                                                                                      Claim 6; Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB;
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                            NYIFIRAHDSEVOTVIAKII
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/note= "This sequence
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specifically claimed in Claim
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/note= "This si
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                                                                            Score 89; I
Pred. No. 1.
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RESULT 10
AAU98036
ID AAU98
XX
AC AAU98
XZ
DT 27-AU
XX
DE S mu
XX
KW Gluco
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                                                                                                                                                                                                                                                                                                               돲
                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                  method is used to produce yoghurt, curd, cheese or other fermented milk products, ice cream, fermented cereal products, water-based jellies, infant formulae and pet foods. Dextransucrase can also be bound to e.g. vitamins or oral vaccines for delivering these to foods, using (A) as carrier. The method produces foods with attractive and uniform texture, since dextransucrase is evenly distributed and forms a thickening agent in situ, with the amount formed being controlled by the amount of dextransucrase bound. Milk does not have to be coagulated in order to achieve a good texture, so the amount of acidic by-products formed is reduced. Dextransucrase binds to many different types of cells over wide ranges of temperature and pH and the treated bacteria can be stored in liquid or powdered form. The present sequence represents the amino acid
   Glucosyltransferase;
                                S. mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The invention relates to preparation of a fermented food product that includes treating the microorganism (A) to be used for fermentation was a dextransucrase so that this binds to the cell walls of (A). The
                                                           27-AUG-2002
                                                                                          AAU98036
                                                                                                                  AAU98036 standard; Protein; 1475 AA
                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; Page 14-20; 38pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          uniform texture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Preparing fermented food products, e.g. yoghurt, using microorganisms that have dextran sucrase bound to the surface, provide attractive and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23-OCT-2000; 2000EP-0123012
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                                                                                                                                                                                                                        3 NYIFIRAHDSEVQTVIAKII 22
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                                glucosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      vitamin;
                                                                                                                                                                                                                                                                                                               1527
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                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                          dextransucrase.
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                                                           (first
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       oral vaccine; enzyme
                                                          entry
GTFB; transgenic plant; paper sizing;
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                                                                                                                                                                                                                                                                 80.4%;
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                                                                                                                                                                                                                                                                 Score 86; Pred. No. 3
                             GTFB mutant D567T/D571K.
                                                                                                                                                                                                                                                     Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Neubauer H,
                                                                                                                                                                                                                                                     DB 2-.
3.1e-06;
                                                                                                                                                                                                                                                                             Length 1527;
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CC (GTF) B polypetide having changes at position from 1480v, D457N, CC D567T, K1014T, D457N/D57TK, D567T/D57TK, D57TK/K1014T, I448V/D457N/D57TK, D567T/D57TK, D57TK/K1014T, I448V/D457N/D567T/D57TK/K7790/K1014T, CC Changes at positions from TS9D, T58DE, N47LD, M47LD/T58DE, And K779Q or a GTF D polypeptide having CC changes at positions from TS9D, T58DE, N47LD, M47LD/T58DE, Also included are a glucan produced by the GTF mutant, CC an isolated polynuclectide which encodes P1 or P2, or its complementary polynuclectide, a ribonucleic acid sequence encoding the GTF mutant, CC an isolated polynuclectide operably linked to a promoter, a vector comprising the polynuclectide operably linked to a promoter, a vector comprising the produced in plant comprising the vector, a transgenic plant comprising and/or coating composition comprising a glucan produced in a plant transformed comprising the mutant GTF, wild type or, starch, a latex, complicating composition comprising a glucan produced in a plant transformed comprising the sproduced in the amyloplast and/or vacuole or a maize line cell glucan in starch biosynthesis, transformed with a gene encoding a glucan producing a glucan in a plant transforming a glucan pagurant of producing a glucan in a plant. The method comprises transforming a glucosyltransferase B or D enzyme, wild-type or mutant and a paper comprising the glucan in a plant. The method comprises transforming a glucosyltransferase B or D enzyme, wild-type or mutant and a paper comprising the producing a plant of the vector, growing the plant gene plant growing conditions to produce a regenerated plant and inducing expression of the comprises by produce a regenerated plant and inducing expression of the comprises by produce and plant to produce the glucan in the criminal subunit, waxy, brittle-1 and comprised starch by produce and substitutes for and additions to modified starch
                                    Glucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucosyltransferase B or D protein useful for producing a glucan as substitutes for and additions to modified starch and latexes i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
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16-JAN-1998
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98US-0009620.
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95US-0482711.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 isolated protein comprising a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note= "Wild-type Asp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'note= "Wild-type Asp
    gloss
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during
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    coating
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RESULT 11
AAU98037
ID AAU98
XX AAU98
XX AAU98
XX Glucc
XW Glucc
XW Coatil
XW coatil
XW coatil
XW amylo
XX Strep
OS Synth
XX Wisc-
FT Misc-
FT FT Misc-
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                                                                                                                                                                                                                                                                                                        11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, D567T/D571K, I448V/D457N/D567T/D571K/K79Q/K1014T, Y169A/Y170A/Y171A, and K779Q or a GTF D polypeptide having changes at positions from T589D, T589E, N471D, N471D/T589D, and
                                                                                                                                                    Glucosyltransferase B or D protein useful for producing a glucan \boldsymbol{u} as substitutes for and additions to modified starch and latexes in
                                                                                                              Claim
                                                                                                                                                                                                     WPI; 2002-414332/44.
                                                                                                                                                                                                                                                                                                                                                                                                                   19-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glucosyltransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S. mutans glucosyltransferase GTFB mutant D567T/D571K/K1014T
                                                                                                                                                                                                                                                                (NICH/) NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                              36;
                                                                                                                                         manufacture, comprises mutations in specific
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17; Conserv
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                                                                                                                                                                                                                                     SE
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                                                                                                          Page -; 44pp;
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95US-0482711.
95US-0485243.
95US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "Wild-type Asp substituted by 1014
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         note= "Wild-type Lys substituted by Thr'
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85.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Wild-type
                                                                                                            English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 84; DB Pred. No. 6.9e 2; Mismatches
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6.9e-06;
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                                                                                                                                         positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Lys"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Thr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ç,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                       useful
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CC N471D/T589E. Also included are a glucan produced by the GTF mutant, CC an isolated polynucleotide which encodes P1 or P2, or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell continuously the vector, a transgenic plant comprising the vector coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the implication composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the glucan is produced in the amyloplast and/or vacuole or a maize line deficient in starch biosynthesis, transformed with a gene encoding a glucan (paper sizing/coating agent). The vector is useful comprising the glucan (paper sizing/coating agent). The vector is useful comprising the plant and inducing expression of the polynucleotide for a time sufficient to produce the glucan in the regenerated plant and inducing expression of the regenerated plant, where the vector contains a transit sequence from cribulose biphosphate carboxylase small subunit, waxy, brittle-1 and chlorophyll AB binding protein to produce a transgenic plant, and glucan is produced in the amyloplast of potato or the vacuole of sugar beer. CC clucans are useful as substitutes for and additions to modified starch and latexes in paper manufacture. Unlike prior art techniques, which require input materials that produce dhemical efficients, paper cc biologically produced input materials, is more cost-effective and cologically growled input materials, is more cost-effective and conjugated input materials that the cost-effective and conjugated input materials that the cost-effective and conjugated input materials.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                               Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic molecule; amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      environmentally friendly. Moreover, glucans also exhibit thermoplastic properties and impart gloss to the paper during coating step. The present sequence represents a GTPB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTPB sequence appearing as AAU980.
                     Misc-difference
                                                        Misc-difference
                                                                                            /note=
Misc-difference 567
                                                                                                                                                                                                                                                                                                                                                      S. mutans
                                                                                                                                 Misc-difference
                                                                                                                                                                                                                            Synthetic
                                                                                                                                                                                                                                            Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                           27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAU98038 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                      Misc-difference
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3 NYIFIRAHDSEVQTVIAKII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 l Similarity
17; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYSFIRAHDSEVOTLIAKII
                                                                                                                                                                                                                                                                                                                                                    GTFB mutant I448V/D457N/D567T/D571K/K779Q/K1014T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                          /note=
571
                                                                                                                                 /note=
457
                     /note=
779
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"Wild-type
                                    "Wild-type
                                                                         "Wild-type Asp
                                                                                                          "Wild-type Asp
                                                                                                                                                 "Wild-type Ile substituted
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Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                    Asp
 Lys substituted by
                                        substituted
                                                                                                              substituted
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .9e-06;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1475;
                                    Λ̈́q
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                                                                                                                                                   Λq
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                                    Lys"
                                                                                                                                                     Val"
                                                                             Thr"
                                                                                                                Asn"
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Misc-difference

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₽Ĕ첧腥첧ë⋨ë⋨ëëëëëëëëëëëëëëëëëëëëëëëëëëë
                      The invention an isolated protein comprising a glucosyltransferase (GTP) B polypeptide having changes at position from 148V, D457N, CC D5677, K1014T, D457N/D57K, CC D5677D571K, K1014T, D457N/D57T, D457N/D57TK, D5677D57TK, CC Y163A/Y10A/Y11A, and K779Q or a GTF D91ypeptide having changes at positions from T589D, T589E, N47D, N47D/T589D, and M47D/T589E. Also included are a glucan produced by the GTF mutant, an introduced with encodes P1 or P2, or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the polynucleotide operably linked to a compression of the vector, a transgenic plant, a paper sizing and/or counting composition comprising the polynucleotide operably linked to a rypression cassette comprising the comprising the comprising the vector, a seed or tuber from the transgenic plant, a paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or starch, a latex, thermoplastic molecule or their combinations or glucan and starch where the plucan from the amyloplast and/or vacuole or a maize like comprising the glucan in a plant. The method comprises transformed where the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan in the plucan produced in the amyloplast of potato or the vacuole of sugar beet.

CC comprising the glucan in a plant or produce the glucan in the produced in the amyloplast of potato or the vacuole of sugar beet.

CC and latexes in paper manufacture. Unite produced by GTF, which utilises to industrie the place during ocating steps which the morphism of the place during coat
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07-JUN-1995;
07-JUN-1995;
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16-JAN-1998;
20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      07-JUN-1995
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19-DEC-2000;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         manufacture, comprises mutations in specific positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000US-0740274
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95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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Query Match Best Local Similarity

78.5%;

Score Pred.

84; No.

DB 23; 6.9e-06;

Length 1475

Sequence

AA;

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RESULT 13
AAU98032
CC (GTF) B polypeptide having changes at position from 1448V, D457N, CC D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K, K1014T, D457N/D567T, D457N/D571K, D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, CC D567T/D571K/K1014T, I448V/D457N/D567T/D571K/K779Q/K1014T, CC Changes at positions from T589D, T589E, N471D, N47LD/T599D, and CC Changes at positions from T589D, T589E, N471D, N47LD/T599D, and CC Changes at positions from T589D, T589E, N471D, T589D, and CC CAPID/T589E, Also included are a glucan produced by the GTF mutant, CC an isolated polynucleotide which encodes P1 or P2, or its complementary CC polynucleotide, a ribonucleic acid sequence encoding the GTF mutant, CC an expression cassette comprising the polynucleotide operably linked to a promoter, a vector comprising the expression cassette, host cell controduced with the vector, a transgenic plant comprising the cransgenic plant of the paper sizing and/or coating composition comprising a glucan produced in a plant transformed with a gene encoding the mutant GTF, wild type or, starch, a latex, the first produced in the amyloplast and/or vacuole or a maize line coefficient in starch biosynthesis, transformed with a gene encoding a glucosyltransferase B or D enzyme, will-type or mutant and a paper
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07-JUN-1995;
16-JAN-1998;
16-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                      Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein.
                                                                                                                                                                                                                                                                                                                                        Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 2002-414332/44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11-DEC-1998;
07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S. mutans glucosyltransferase GTFB mutant D567T.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            standard;
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98US-0008172.
98US-0009620.
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95US-0478704
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein; 1475 AA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       molecule;
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RESULT 14
AAU98034
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                11-DEC-1998;
07-JUN-1995;
07-JUN-1995;
Nichols SE
                                            (NICH/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucosyltransferase; coating composition;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mutans glucosyltransferase GTFB mutant D457N/D567T.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus mutans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         amyloplast;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     554 SYSFIRAHDSEVOTLIADII 573
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7-1998;
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                                            NICHOLS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
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                                                                                      98US-0210361.
95US-0478704.
95US-0482711.
95US-0485243.
98US-0007999.
98US-0008172.
98US-0009620.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTFB; transgenic plant; paper sizing; glucan; starch; latex; thermoplastic molecule;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         paper manufacture;
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Pred. No. 8.4e-05;
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Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                            WPI;
                                                                                                                                                                                                Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                            2002-414332/44.
```

Sequence properties and impart gloss to the paper during coating step. The present sequence represents a GTFB mutant of the invention. Note: The present sequence is not shown in the specification but was created by the indexer using the GTFB sequence appearing as AAU98027 and the information in claim 36. require input materials that produce chemical effluents, paper manufacture utilising the glucan produced by GTF, which utilises biologically produced input materials, is more cost-effective and environmentally friendly. Moreover, glucans also exhibit thermoplastic environmentally friendly. 1475 AA;

Matches Query Match Best Local 16; w Similarity NYIFIRAHDSEVQTVIAKII Conservative 72.9%; 2; Mismatches Score 78; DB 23; L Pred. No. 8.4e-05; "" matches 2; 22 Length 1475; Indels 0, Gaps

0;

AAU98035

밁

554

SYSFIRAHDSEVOTLIADII 573

standard; Protein; 1475

27-AUG-2002 (first entry)

mutans glucosyltransferase GTFB mutant D457N/D571K.

RESULT 15
AAU98035
ID AAU98
XX AAU98
XC AAU98
XC AAU98
XX 27-AU
XX S. mu
XX Glucc
KW Glucc
KW amylc
XX amylc Glucosyltransferase; GTFB; transgenic plant; paper sizing; coating composition; glucan; starch; latex; thermoplastic amyloplast; vacuole; paper manufacture; mutant; mutein. molecule;

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CC 15671/1571KK/1047; 1448/Dps71/D571KK/T992/K1014T,
CC 15671/T08/Y171A, and K7790 or a GTF D polypeptide having
CC changes at positions from TS89D, T889E, W917D, W71D/T889D, and
CM971D/T589E. Also included are a glucan produced by the GTF mutant,
CC an isolated polynuclectide which encodes P1 or P2, or its complementary
CC an expression cassette comprising the polynucleotide operably linked to a
CC promoter; a vector comprising the polynucleotide operably linked to a
CC promoter; a vector comprising a dyucan produced in a plant transformed
CC vector, a seed or tuber from the transgenic plant, a paper sizing and/or
CC coating composition comprising a dyucan produced in a plant transformed
CC with a gene encoding the mutant GTF, wild type or, starch, a latex,
CC thermoplastic molecule or their combinations or glucan and starch where
CC the glucan is produced in the amyloplast and/or vacuole or a maize line
CC deficient in starch biosynthesis, transformed with a gene encoding a
CC comprising the glucan in a plant. The method comprises transforming a
CC comprising the glucan in a plant. The method comprises transforming a
CC plant cell with the vector, growing the plant cell under plant growing
CC conditions to produce a regenerated plant and inducing expression of the
CC riborlose biphosphate carboxylase small submit, waxy, brittle-1 and
CC is produced in the amyloplast of potato or the vacuole of sugar beet.
CC colonia are useful as substitutes for and additions to modified stranch
CC and latexes in paper manufacture. Unlike prior art techniques, which
CC and latexes in paper manufacture. Unlike prior art techniques, which
CC and latexes in paper manufacture. Unlike prior art techniques, which
CC concentrally friendly. Moreover, glucans also exhibit thermoplastic
CC properties and impart gloss to the paper during coating step.

CC manufacture utilising the glucan produced by GTF, which utilises
CC properties and impart gloss to the paper during coating step.

CC was created by the indexer using the GTFB sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The invention an isolated protein comprising a glucosyltransferase (GTF) B polypeptide having changes at position from I448V, D457N, D567T, K1014T, D457N/D567T, D457N/D571K, D567T/D571K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Glucosyltransferase B or D protein useful for producing a glucan useful as substitutes for and additions to modified starch and latexes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 36; Page -; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 paper manufacture, comprises mutations in specific positions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2002-414332/44
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20-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           07-JUN-1995
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07-JUN-1995;
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98US-0008172.
98US-0009620.
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95US-0485243.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
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                                                                     SXS
                                   Matches
                                          Query Match
Best Local
                                                                    Sequence
                                                                                     and the information in claim
554 SYSFIRAHDSEVQDLIAKII 573
                                   16;
                  ω
                                           Similarity
            NYIFIRAHDSEVQTVIAKII 22
                                                                    1475 AA;
                                  Conservative
                                         72.9%;
80.0%;
                                  <u>ب</u>
                               Score 78; Ub ...
Pred. No. 8.4e-05;
                                                                                     36.
                                                  Length 1475;
                                  Indels
                                  0;
                                  Gaps
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0;

Search completed: November 13, 2003, 09:38:29
Job time : 41.3507 secs

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Result
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                                                                                                                                                                                                                                                                                                                                                                                                                     Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Minimum DB seq length: 0
Maximum DB seq length: 2000000000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Perfect score:
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O
Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                              Score
                                                                                                                            protein search, using sw model
                                                                                                                                                                                                                                                                               Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      283308 segs, 96168682 residues
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107
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100.0
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                           1431
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1449
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                                                                                                         S51946
D82080
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T04531
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B84213
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T30858
T30857
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T26383
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AF1276
T40115
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                                                                                                                                                                                          probable dextransu
glucosyltransferas
dextransucrase (EC
                                                                                                                                                                                                                                        glucosyltransferas
glucosyltransferas
        probable lipoprote hypothetical prote
                          pyruvate kinase
pyruvate kinase
HCRF3 protein
                                                                                                  nine-cis-epoxycaro
probable helicase
                                                                                                                mutacor mutT prote
PRL2 protein - Ara
                                                                                                                                                       glucosyltransferas
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dextransucrase (EC
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                                                                                                                                                                                                                                                            dextransucrase
                                                                                                                                                                                                                                                                               Description
                                                    nitric-oxide synth immunogenic protei
                                                                                                                                    pyruvate kinase
                                                                                                                                               hypothetical prote
                                                                                                                                                                                                                                glucosyltransferas
                                                                       phosphate regulon
                                                                                probable zinc prot
                                                                                       hypothetical prote
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ALIGNMENTS

dextransucrase (EC 2.4.1.5) precursor - Streptococcus mutans

Species: Streptococcus mutans

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A;Status: preliminary
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1431 <HON>
A;Residues: 1-1431 <HON>
A;Cross-references: GB:M29296
C;Superfamily: cpl repeat homology <CPl>
F;181-201/Domain: cpl repeat homology <CPl>
F;1197-1146/Domain: cpl repeat homology <CPl>
F;1197-1271/Domain: cpl repeat homology <CPl>
F;1277-1297/Domain: cpl repeat homology <CPl>
F;1277-1297/Domain: cpl repeat homology <CPl>
F;1321-1340/Domain: cpl repeat homology <CPl>
F;1341-1361/Domain: cpl repeat homology <CPl>
F;1385-1404/Domain: cpl repeat homology <CPl>
C;Genetics:
A;Gene: gtfS
C;Superfamily: cpl repeat homology
                                                                          A;Molecule type: DNA
A;Residues: 1-1365 <GIL>
A;Cross-references: GB:M30943; NID:g153652; PIDN:AAA26898.1; PID:g153653
                                                                                                                                                                                                                                                                                                           glucosyltransferase (EC 2.4.1.-) gtfS precursor - Streptococcus sobrinus C;Species: Streptococcus sobrinus C;Decies: 5-roun-1992 #sequence_revision 30-Jun-1992 #text_change 15-Oct-1: C;Accession: A41483
                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
A41483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Honda, O.; Kato, C.; Kuramitsu, H.K.
J. Gen. Microbiol. 136, 2099-2105, 1990
A;Title: Nucleotide sequence of the Streptococcus mutans gtfD
A;Reference number: A45866; MUID:91100959; PMID:2148600
A;Accession: A45866
                                                                                                                                                                                             Infect. Immun. 58, 2452-2458, 1990
A;Title: Analysis of the Streptococcus downei gtfS gene,
A;Reference number: A41483; MUID:90316665; PMID:2142479
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                                                                                                                                                                         A; Accession: A41483
                                                                                                                                                                                                                                                                                    R; Gilmore, K.S.;
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22; Conserv
                                                                                                                                                                                                                                                                                    Russell,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
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100.0%;
                                                                                                                                                                                                                                                                                    R.R.B.; Ferretti, J.J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
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Pred. No. 2.5e-09;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 1431;
                                                                                                                                                                                                                                which specifies a glucosyltrans
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RESULT 3
                glucosyltransferase N - Streptococcus salivarius (fragment) C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_ch C;Accession: T30552 R;Jaffe, R.I.
                                                                                                                                                                                                                                                                                                               A;Cross-
C;Geneti
A;Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Infect. Immun. 63, 609-621, 1995
A;Title: Streptococcus salivarius ATCC 25975 possesses at A;Reference number: Z20909; MUID:95122197; PMID:7822030 A;Accession: T30858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change 22-Oct-1999 C;Accession: T30858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        glucosyltransferase - Streptococcus salivarius C;Species: Streptococcus salivarius C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 C;Accession: T30857
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R; Simpson, C.L.;
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   submitted
                                                                                                        T30552
                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Title: Streptococcus salivarius ATCC 25975 possesses A; Reference number: Z20909; MUID:95122197; PMID:7822030
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Status: preliminary; translated
A;Molecule type: DNA
                                                                                                                      RESULT 5
                                                                                                                                                                                                                                                                                                                                                                  A;Status: preliminary; translated
A;Molecule type: DNA
A;Residues: 1-1449 <SIM>
                                                                                                                                                                                                                                                                                                                                                                                                                    A; Reference number: A; Accession: T30857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: EMBL:L35928; NID:g662380; PID:g662381; PIDN:AAC41413
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Best Local S
Matches 16
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les 18; Conserv
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   EMBL
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   Data
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81.0%;
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72.7%;
Library,
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Pred. No. 2.8e
2; Mismatches

    Mismatches

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                                                                                                                                                                                                                                                            Score 88;
Pred. No.
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Pred. No. 1.6e-06;
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                                                                                                                                                                                                                                  R, Jacques, N.
R) Jacques, N.
submitted to the EMBL Data Library, March 1992
a:Reference number: S22726
                                                                     R.Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A. J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least A;Reference number: A44811; MUID:92148377; PMID:1838391
A;Accession: S28810
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   A; Cross-references: EMBL: 211873
C; Genetics:
                                    A; Molecule type: DNA
A; Residues: 1-51 <GIF>
                                                                                                                                                           A; Experimental source: ATCC
                                                                                                                                                                          A;Molecule type: DNA
A;Residues: 1-1599 <JAC>
A;Residues: 1-1599 <JAC>
A;Cross-references: EMBL:Zl1872; NID:g47530; PIDN:CAA77898.1; PID:g47531
                                                                                                                                                                                                                               A; Reference number: A; Accession: S22737
                                                                                                                                                                                                                                                                                                  C;Date: 16-Sep-1992 #sequence_revision
C;Accession: S22737; S28810; B44811;
                                                                                                                                                                                                                                                                                                                                  glucosyltransferase (EC 2.4.1.-) S - Streptococcus salivarius
C;Species: Streptococcus salivarius
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two

glucosyltransferase

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revision 16-Sep-1992 344811; S22727

#text_change

21-Jan-2000

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A;Molecule type: DNA
A;Residues: 1-1449 <UAF>
A;Cross-references: EMBL:AF049609; NID:g2935545; PID:g2935546; PIDN:AAC05156.1
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                     C;Species: Leuconostoc mesenteroides
C;Date: 22-Oct-1999 #sequence_revision 22-Oct-1999 #text_change
C;Accession: T31098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Reference number: Z20854
A; Accession: T30552
                                                                                                                                     A; Description: produces dextran composed only of alpha (1-6) C; Keywords: glycosyltransferase; hexosyltransferase
                                                                                                                                                                                                                            A;Molecule type: DNA
A;Residues: 1-1508 <MON>
A;Residues: 1-1508 <MON>
A;Cross-references: EMBL.AF030129; NID:g2766611; PID:g2766612; PIDN:AAB95453.1
A;Experimental source: strain NRRL B-1299
                                                                                                                                                                                                                                                                                                                 A;Title: Cloning and sequencing of a gene coding for an A;Reference number: Z20981; MUID:98164374; PMID:9503626 A;Accession: T31098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Description: Streptococcus salivarius V1477 gtfN
                                                                                                                                                                          A;Gene: dsr
C;Function:
                                                                                                                                                                                                               C; Genetics:
                                                                                                                                                                                                                                                                                                 A; Status: preliminary; translated
                                                                                                                                                                                                                                                                                                                                                                  R; Monchois, V.; Remaud-Simeon, M.; Monsan, P.; Willemot, FEMS Microbiol. Lett. 159, 307-315, 1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                            probable dextransucrase (EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Status: preliminary; translated
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Best Local
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636 NYSFVRAHDSEVOTVIAQII 655
                                                                    1 Similarity
17; Conserv
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16; Conserv
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                      NYIFIRAHDSEVQTVIAKII 22
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85.0%;
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Pred. No. 3.7e
4; Mismatches
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                                                                                       Score 87;
Pred. No.
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. 3.7e-06;
2;
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5.7e-06;
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A;Gene: gtfJ
C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyltransferase
F;1307-1326/Domain: cpl repeat homology <CP4>
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A; Residues: 1-1518 <GIF>
A; Residues: 1-1518 <GIF>
A; Cross-references: EMBL: Z11873; NID: g47526; PIDN: CAA77900.1; PID: g47527
A; Note: sequence extracted from NCBI backbone (NCBIN: 81050, NCBIP: 81052)
                                                                                                                                                                                                                                                                                                      R;Giffard, P.M.; Simpson, C.L.; Milward, C.P.; Jacques, N.A.
J. Gen. Microbiol. 137, 2577-2593, 1991
A;Title: Molecular characterization of a cluster of at least two glucosyltransferase A;Reference number: A44811; MUID:92148377; PMID:1838391
A;Accession: A44811
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A;Title: Cloning and sequencing of a gene coding for a novel A;Reference number: JC5473; MUID:97136886; PMID:8982063
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JC5473
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C;Superfamily: cpl repeat homology
C;Keywords: glycosyltransferase; hexosyl
F;1456-1475/Domain: cpl repeat homology
맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                      glucosyltransferase (EC 2.4.1.-) I - Streptococcus salivarius
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                                                                                                                                                                                                                                                                                                                                                                                             ;Species: Streptococcus salivarius
;Date: 31-Dec-1993 #sequence_revision 31-Dec-1993
;Accession: A44811; S22726; S28809
                                                                        Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ;Keywords: glycosyltransferase; hexosyltransferase
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Best Local
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604
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NYVFIRAHDNNVQDITAETI 623
                        NYIFIRAHDSEVQTVIAKII 22
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                                                                      Conservative
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85.0%;
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                                                                                                        72.9%;
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                                                                    Score 78; DB 2;
Pred. No. 0.00018;
4; Mismatches 2
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Pred. No.
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Pred. No. 6.1e-06;
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A;Description: catalyzes the synthesis of both water-soluble and C;Superfamily: cpl repeat homology C;Keywords: duplication; glycosyltransferase; hexosyltransferase F;1-34/Domain: signal sequence #status predicted <SIG>F;35-1375/Product: glucosytransferase #status predicted <MAT>
                                                                                                                                                                                                                                                                                   A;Experimental source: GS-5
R;Shiroza, T.; Ueda, S.; Kuramitsu, H.K.
J. Bacteriol. 169, 4263-4270, 1987
A;Title: Sequence analysis of the gtfB gene
A;Reference number: A33135; MUID:87308013; P
A;Accession: C33135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Title: Sequence analysis of the gtfC gene from Streptococcus mutans GS-5. A;Reference number: JT0345; MUID:89137980; PMID:2976010
A;Accession: JT0345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
JT0345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  F;1096-1115/Domain: cpl repeat
F;1224-1243/Domain: cpl repeat
F;1289-1308/Domain: cpl repeat
F;1354-1373/Domain: cpl repeat
F;1419-1438/Domain: cpl repeat
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A;Molecule type: DNA
A;Residues: 1-1475 <SHI>
A;Cross-references: GB:M17361; NID:Q
A;Cross-references: GB:M17361; NID:Q
A;Shiroza, T.; Ueda, S.; Kuramitsu,
R;Shiroza, T.; Ueda, S.; Seguence Da
submitted to the Protein Seguence Da
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J. Bacteriol. 169, 4263-4270, 1987

A;Title: Sequence analysis of the gtfB gene from Streptococcus
A;Reference number: A33135; MUID:87308013; PMID:3040685
A;Accession: B33135
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                                                                                                                      A;Gene: gtfC
C;Function:
                                                                                                                                                                                                                 A; Molecule type: DNA
A; Residues: 1-349 < SHI>
                                                                                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
A; Residues: 1-1375 < UED >
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R;Ueda, S.; Shiroza,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C;Date: 31-Mar-1992 #sequence_revision 31-Mar-1992 #text_change 24-Sep-1999
C;Accession: JT0345; C33135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dextransucrase (EC 2.4.1.5) precursor - Streptococcus N;Alternate names: sucrose 6-glucosyltransferase
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A; Residues: 1-171,173-641,'N',643-1475
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75.0%;
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Pred. No.
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F;1093-1112/Domain: cpl repeat h
F;1282-1241/Domain: cpl repeat h
F;1287-1306/Domain: cpl repeat h
F;1330-1351/Domain: cpl repeat h
F;1330-1371/Domain: cpl repeat h
F;1402-1420/Domain: cpl repeat h
F;1405-1484/Domain: cpl repeat h
F;1465-1484/Domain: cpl repeat h
F;1465-1484/Domain: cpl repeat h
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; Leithauser, B.; Keller, K.; Cruz, R.; Danson, M.J.; Hough, D.W.; Mad

Jung, K.H.; Alam, M.; Freitas, T.

Proc. Natl. Acad. Sci. U.S.A. 97, 12176-12181, 2000

A;Authors: Hou, S.; Daniels, C.J.; Dennis, P.P.; Omer, A.D.; Ebhardt,

A;Title: Genome sequence of Halobacterium species NRC-1.

A;Reference number: A84160; MUID:20504483; PMID:11016950

A;Accession: B84213
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F;1253-1272/Domain: cpl
F;1318-1337/Domain: cpl
                                                                         A; Gene: eif2a 
C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                             hypothetical protein eif2a [imported] - Halobacterium sp. NRC-1
C;Species: Halobacterium sp. NRC-1
C;Date: 02-Feb-2001 #sequence_revision 02-Feb-2001 #text_change 16-Feb-2001
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A;Residues: 1-1592 <ABO>
A;Cross-references: GB:D90213; NID:g217032; PIDN:BAA14241.1;
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C;Accession: A38175
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C;Species: Streptococcus sobrinus
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                                                                                                                             A;Cross-references: GB:AE004437; NID:g10580148; PIDN:AAG19070.1;
                                                                                                                                                   A; Molecule type: DNA
A; Residues: 1-267 <STO>
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Best Local
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Best Local (
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                                                                         translation
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                 42.1%;
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homology <CP4>
homology <CP5>
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homology <CP6>
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Pred. No. 0.04
2; Mismatches
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Pred. No.
                 Score 45;
Pred. No.
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2; Mismatches
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0.043;
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                                   DB 2; Length 267;
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 Indels
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D.W.; Maddocks, D.(
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G.; Jabl
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A;Cross-references: EMBL:Z28373
R;BlakeLey, S.; Gottlob-McHugh, S.; Wan, J.; Crews, L.; Miki, submitted to the EMBL Data Library, November 1993
A;Description: Molecular characterisation of plastid pyruvate A;Reference number: S44286
                                                                                                                                                                                                                                                                                                                                                                                                                                 R;Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J. chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, l, R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
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                                                                                                                                                                                                                                      A;Cross-references: GB:AE004310; GB:AE003852; NID:g9656963; PIDN:AAF95535.1; GSPDB:GN001A;Experimental source: serogroup O1; strain N16961; biotype El Tor C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                   A;Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae A;Reference number: A82035; MUID:20406833; PMID:10952301
A;Accession: D82080
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C;Species: Nicot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change
C;Accession: D82080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C; Species: Vibrio cholerae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Molecule type: mRNA
A;Residues: 1-86,'A',88-593 <BLW>
A;Cross_references: EMBL:Z28373;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Plant Mol. Biol. 27, 79-89, 1995
A;Title: Molecular characterization of plastid pyruvate
A;Reference number: S51946; MUID:95170010; PMID:7865798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Blakeley, S.; Gottlob-McHugh, S.; Wan, J.; Crews, L.; Miki, B.; Ko, K.; Dennis, Plant Mol. Biol. 27, 79-89, 1995
                                                                                                                                                                      A;Map position: 1
C;Superfamily: mutator mutT; mutT domain homology
                                                                                                                                                                                                                  A; Gene: VC2392
                                                                                                                                                                                                                                                                                                       A; Molecule type: DNA
A; Residues: 1-132 <HEI>
                                                                                                                                                                                                                                                                                                                                                 A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mutator MutT protein VC2392 [imported] - Vibrio cholerae (strain N16961 serogroup
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                                                                                                                          Query Match
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SKIW_HOMAN
SKIZ_YEAST
BIOD_VIBCH
COBS_FEEDE
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Q8rai7 thermoanaer				P32946 candida rug				P02983 staphylococ			P55295 xanthomonas

ALIGNMENTS

Glucosyltransferase-S precursor (EC 2.4.1.5) (GTF-S) (Dextransucrase) (Sucrose 6-glucosyltransferase). GTED OR SMU 910.) Streptococcus mutans. Bacteria, Firmicutes; Lactobacillales; Streptococcaceae; Bacteria, Firmicutes; Lactobacillales; Streptococcaceae; Bacteria, Firmicutes; Lactobacillales; Streptococcaceae; STRAIN-GS-5; MEDIJME-9310098; PubMed-2148600; Honda O., Kato C., Kuramiteu H.K.; "Nucleocide sequence of the Streptococcus mutans gtfD gene encoding the glucosyltransferase S enzyme."; J. Gen. Microbiol. 16:2099-2105(1990). SEQUENCE FROM N.A. STRAIN-UN159 / AFCC 700610 / Serotype C; MEDIJME-2295063; PubMed-21397186; PubMed-21397186; PubMed-21397186; PubMed-2295063; PubMed-21397186; PubMed-21397186; PubMed-2295063; PubMed-21397186; PubMed-213971
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EMBL; M29296; AAA26895.1; --
EMBL; D88653; BAA26103.1; --
EMBL; D88656; BAA26107.1; --
EMBL; D88659; BAA26111.1; --
EMBL; D88659; BAA26115.1; --
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| T -> A (IN STRAIN MT4251).
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| D -> K (IN STRAIN MT4251).
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| LG -> IR (IN STRAIN MT4245).
| G -> R (IN STRAIN MT4239).
| G -> R (IN STRAIN MT4239).
| F -> Q (IN STRAIN MT4239).
| S -> N (IN STRAIN MT4239).
| S -> C (IN STRAIN MT4231 AND MT
| F -> L (IN STRAIN MT4245).
| C -> P (IN STRAIN MT4245).
| K -> T (IN STRAIN MT4245).
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MT4245).
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MT4251)
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V (IN STRAIN MT4245)
T (IN STRAINS GS-5, MT4:
1, MT4467 AND MT8148)
L (IN STRAIN MT4239)
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7 AND MT8148).
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RA Gilmore K.S., Russell R.R., Ferretti J.J.;

RI "Analysis of the Streptococcus downei gtfS gene, which specifies a glucosyltransferase that synthesizes soluble glucans.";

Infect Immun. 58:245-2458 (1990).

L Infect Immun. 58:245-2458 (1990).

C -I- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT COMMENT OF THE DENTAL PLAQUE BECAUSE COMMENT OF THE DENTAL PLAQUE BECAUSE COMMENT OF THE DENTAL PLAQUE BECAUSE COMMENT OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGCTRATION OF BACTERIAL CELLS AND FOOD DEBRIS.

C -I- CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-COMMENT OF THE COMMENT OF THE COMMENT OF THE COMMENT OF THE PRIMER GLUCAN UNLIKE GTF-I.

C -I- DISBASE: DENTAL CARLES.
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Best Local S
Matches 22
Transferase;
SIGNAL
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REPEAT 1
REPEAT 1
DOMAIN 1
REPEAT 10
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01-DEC-1992 (Rel. 24, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Glucosyltransferase-S precursor (EC 2.4.1.5)
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                                                                             InterPro; IPRO02479; CW_binding.
InterPro; IPRO03318; Glyco hydro 7
Pfam; PF01473; CW_binding_1; 8.
Pfam; PF02324; Glyco hydro 70; 1.
Transferase; GlycosyTtransferase;
                                                                                                                                                    EMBL; M30943; AAA26898
                                                                                                                                                                            entities requires a license agreement (S or send an email to license@isb-sib.ch).
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SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 10 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                         MISCELLANEOUS: GTF-S
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Earase; Signal; Repeat; Dental c OR 37 (POTENTIAL). GLUCOSYLTRANSFERASE-S. CELL WALL BINDING 1. CELL WALL BINDING 2. CATALYTIC (APPROXIMATE). CELL WALL BINDING 3.
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R -> K (IN STRAIN MT4467).
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R (IN REF. 1).
MW; CE4A279C4D708645 CRC64;
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Pred. No. 7.1e-1
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P13470; O693
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01-NOV-1988 (Rel. 09, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-SI precursor (EC 2.4.1.5) (G'nextransucrase) (Sucrose 6-glucosyltransferase)
        MEDLINE-87308013; PubMed=3040685;
Shiroza T., Ueda S., Kuramitsu H.K.;
Shiroza T., Ueda S., Kuramitsu H.K.;
"Sequence analysis of the gits gene from Streptococcus mutans.";
J. Bacteriol. 169:4263-4270(1987).
-!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUC
TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENYAL PLAQUE BE
OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
-!- CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Fujiwara T., Terao Y., Hoshino I., Nawayata T., Terao Y., Hoshino I., Nawayata T., Hamada S., Kimura S., Hamada S., "Molecular analyses of glucosyltransferase genes among strains "Molecular analyses of glucosyltransferase genes among strains "Molecular analyses of glucosyltransferase genes among strains "Tringal Analyses", "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransferase genes among strains", "Tringal Analyses of glucosyltransfera
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MEDLINE=22295063; PubMed=12397186;
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Iin S.,
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
"Genome sequence of Streptococcus mutans UA159, a cariogenic c
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STRAIN=MT4239 /
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DISEASE: DENTAL CARIES.

MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH FORMS OF GLUCANS.

SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME TO A GLUCAN-
                                                                                                                                                                                                                                                                                                           BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 5 cell wall binding repeats.
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InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF0473; CW_binding_I; 1.
Pfam; PF02324; Glyco_hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat; Dental caries;
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L; D88652; BAA26102.1; -.
L; D88658; BAA2610.1; -.
L; D88658; BAA26110.1; -.
L; D88661; BAA26114.1; -.
L; D89978; BAA26206.1; -.
L; AE014940; AAN58706.1; -.
L; M17361; AAA88589.1; -.
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SEQUENCE FROM N.A.
SERAIN-UA159 / AFCC 700610 / Serotype c,
STRAIN-UA159 / AFCC 700610 / Serotype c,
STRAIN-UA159 / AFCC 700610 / Serotype c,
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,
Ajdic D., McShan W.M., Moltaughlin R.E., Jia H., Lin S.,
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti
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28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransfer
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STRAIN-MT4239 / Serotype C, MT4245
MT4467 / Serotype E, and MT9148 / SMEDLINE-98231643; PubMed=9570124;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus mutans."
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Kimura S., Hamada S.;
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NATI. ACAd. SGI. U.S.A. 99:14434-14439(2002).

TO FINCTION: PRODUCTION OF EXFRACELLULAR GLUCANS, THAT ARE THOUGHT FUNCTION: PRODUCTION OF EXPRANCELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: SUCCESS + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N+1).

SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CARIES.

MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCCAS AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES BOTH WATER-SOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCCANS (ALPHA 1,6-GLUCOSE).
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70.0%;
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V -> I (IN STRAIN MT8148).

D -> N (IN STRAIN MT4239).

V -> I (IN STRAIN MT4239) AND MT8148).

S -> P (IN STRAIN MT8148).

S -> P (IN STRAIN MT8148).

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QRNHWDYDYRRDFGRGSSSAVREFHSRNGFFDNFFRF ->
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the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a coerween the Swiss Institute of Bioinformatics and the EMBL
                                                                                                                                                                                                                                         FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S. MUTANS.
SIMILARITY: Contains 10 cell wall binding repeats.
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Pfam; PF01473; CW_binding_I, I.
Pfam; PF02324; Glyco_hydro_70; 1. VARIANI VARIANT M17361; AAA88588.1; -...; D88651; BAA26101.1; -...; D88651; BAA26105.1; -...; D88657; BAA26109.1; -...; D88660; BAA26119.1; -...; D89977; BAA26119.1; -...; AE014940; AAN58705.1; -... proteome. 1168 1182 1234 1263 1263 1086 1158 1163 1355 1420 62 65 68 89 168 276 968 399 474 512 519 701 708 938 952 Glycosyltransferase; Signal; 78 86 1470 1210 1275 34 1476 1051 1476 1130 1086 1158 1163 1168 1182 1182 1234 1263 1263 1272 399 474 512 519 701 708 938 957 970 964 89 168 276 POTENTIAL.
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J. BACTERION: 173:989-996(1991).

-i- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THO TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=6715 / Serotype G;
MEDLINE=91123227; PubMed=1704006;
Abo H., Matsumura T., Kodama T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-AUG-1992 (Rel. 23, Created)
01-AUG-1992 (Rel. 23, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
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STRAIN=6715 / Serotype G;
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                                                                                                                                                                         use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Peptide sequences for sucrose splitting and Streptococcus sobrinus glucosyltransferase (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
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InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW binding_1; 13.
Pfam; PF02324; Glyco_hydro_70; 1.
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                                                                                                                                   send an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-
                                                                                                                                                                                             Buropean Bioinformatics Institute. The by non-profit institutions as long
                                                                                                                                                                                                                                                                                                                                                                                      MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES BOTH WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                    fructose + {(1,6)-alpha-D-glucosyl}(N+1).
SUBCELLULAR LOCATION: Secreted.
DISEASE: DENTAL CARIES.
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                                                                                                                                                                                                                                                           SWISS-PROT entry is copyright. It is produced through
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                                                                                                                                 requires a license agreement (S
an email to license@isb-sib.ch).
                                                                                                                                                                                                                                       the Swiss Institute of Bioinformatics and the EMBL outstation
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; Lactobacillales; Streptococcaceae;
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SEQUENCE
EMBL; M17391; AAC63063.1; -.
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70
                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collable between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for conmodified and this statement is not removed. Usage by and for conmodified and this statement is not removed. Usage by and for conmodified and this statement is not removed.
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"Nucleotide sequence of a glucosyltransferase gene from Streptococcus sobrinus MFe28.";
J. Bacteriol. 169:4271-4278 (1987).
-!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT
-!- FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT
-TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-JUL-1989 (Rel. 11, Created)
01-JUL-1989 (Rel. 11, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferaser approcursor (EC 2.4.1.5)
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BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 19 cell wall binding repo
                                                                                                                                                                                                                                                                                                                                                                                   MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES BOTH WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES BOTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosy1}(N)
fructose + {(1,6)-alpha-D-glucosy1}(N+1).
SUBCELLULAR LOCATION: Secreted.
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Shukla H.D., Lasky S.R., Baliga N.S., Thorson V., Sbrogna J.,
Swartzell S., Weir D., Hall J., Dahl T.A., Welti R., Goo Y.A.,
Leithauser B., Keller K., Cruz R., Danson M.J., Hough D.W.,
Maddocks D.G., Jablonski P.E., Krebs M.P., Angevine C.M., Dale H.,
Maddocks D.G., Jablonski P.E., Krebs M.P., Angevine C.M., Dale H.,
Isenbarger T.A., Peck R.F., Pohlschroder M., Spudich J.L., Jung K.-H.,
Alam M., Freitas T., Hou S., Daniels C.J., Dennis P.P., Omer A.D.,
Ebhardt H., Lowe T.M., Liang P., Riley M., Hood L., DasSarma S.;
"Genome sequence of Halobacterium species NRC-1.";
Proc. Natl. Acad. Sci. U.S.A. 97:12176-12181(2000).
-!- FUNCTION: eIF-2 functions in the early steps of protein synthesis
by forming a ternary complex with GTP and initiator tRNA (By
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DOMAIN
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Archaea; Euryarchaeota;
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28-FEB-2003 (Rel. 41,
28-FEB-2003 (Rel. 41,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9HRT8;
28-FEB-2003
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EMBL; AE005006; AAG19070.1; PIR; B84213; B84213. HSSP; P05055; 1SRO.
                                                                                                    the European Bioinformatics Institute. There are no restrictions us to non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/an
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                                                                                      or send an
                                                                                                                                                                                             between
                                                                                                                                                                                                                                                             chain (By similarity).
SIMILARITY: Belongs to the eIF-2-alpha family.
SIMILARITY: Contains 1 S1 motif domain.
                                                                                                                                                                                                                                                                                                                           SUBUNIT: Heterotrimer composed of an alpha, a beta,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HALN1
                                                                                                                                                                                        SWISS-PROT entry is copyright. It is produced through a ceen the Swiss Institute of Bioinformatics and the EMBL
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13; Conserv
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                                                                                    equires a license agreement (S email to license@isb-sib.ch).
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Last annotation update)
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                                                                                                         moved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
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VDING (APPROXIMATE).

B, AND 5 AC REPEATS.
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                                                                                                                                                                                                                                                                                                                                                              and tobacco.",

Plant Mol. Biol. 27:79-89(1995).

-!- CATALYTIC ACTIVITY: ATP + pyruvate = ADP +
-!- COPACTOR: REQUIRES MAGNESIUM AND POTASSIUM
-!- PATHWAY: Glycolysis; final step.
-!- SUBCELLULAR LOCATION: Chloroplast.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      InterPro; IPR003029; S1.
Pfam; PF00575; S1; 1.
SMART; SM00316; S1; 1.
PROSITE; PS50126; S1; 1.
Initiation factor; Protein biosynthesis; RNA-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KPYA
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InterPro; IPR003029;
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SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
Petit Havana SR1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nicotiana tabacum (Common tobacco).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eu
Asteridae; lamiids; Solanales; Solanaceae; Nicotiana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01.NOV-1997 (Rel. 35, Created)
01.NOV-1997 (Rel. 35, Last sequence update)
28.FEB-2003 (Rel. 41, Last annotation update)
Pyruvate kinase isozyme A, chloroplast precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DOMĀIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Complete proteome.
                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collable between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Dennis \hat{\mathbf{D}}.\mathbf{T}.; "Molecular characterization of plastid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Blakeley S.D., Gottlob-Mchugh S.,
                                                                                       Pfam; PF00224; PK; 1.

Pfam; PF02887; PK_C; 1.

PRINTS; PR01050; PYRUVTKNASE.
                                                                                                                                                            EMBL; Z28373; CAA82222.1; PIR; S51946; S51946.
                                                                                                                                                                                                                               use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                      -!- TISSUE SPECIFICITY: HIGHEST LEAVES AND FLOWERS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=4097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q40545;
Transit peptide.
TRANSIT 1
CHAIN ?
                                                                                                                                                                                                  or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                  entities requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=95170010; PubMed=7865798;
                                                   TIGRFAMS; TIGRO1064; pyruv_kin; 1.
PROSITE; PS00110; PYRUVATE_KINASE; 1.
                                                                 ProDom; PD001009; Pyruvate_kinase; 1.
TIGRPAMs; TIGR01064; pyruv_kin; 1.
                                      Transferase; Pyruvate; Kinase; Glycolysis;
                                                                                                                                   [nterPro;
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                                                                                                                                                                                                                                                                                                                          DEVELOPMENTAL STAGE: MOST ABUNDANTLY EXPRESSED DURING THE EARLY GLOBULAR TO EARLY COTYLEDONARY STAGES OF EMBRYO DEVELOPMENT.
                                                                                                                                                                                                                                                                                                              SIMILARITY: BELONGS TO THE PYRUVATE KINASE FAMILY.
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8; Conserv
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VRDHVNEDQTVVAKVL
                                                                                                                                   IPR001697; Pyruvate_kinase.
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(BY SIMILARITY).
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MBL outstation -
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Matches 11
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STRAIN=CV. Columbia;
STRAIN=CV. Columbia;
STRAIN=CV. Columbia;
MEDLINE=98438452; PubMed=9765207;
MEDLINE=98438452; PubMed=9765207;
Memeth K., Salchert K., Putroky P., Bhalerao R., Koncz-Kalman Z.,
Stankovic-Stangeland B., Bako L., Mathur J., Okresz L., Stabel S.,
Stankovic-Stangeland B., Bako L., Mathur J., Okresz L., Stabel S.,
Geigenbergger P., Stitt M., Redei G.P., Schell J., Koncz C.;
"Pleiotropic control of glucose and hormone responses by PRL1, a
""" lear WD protein, in Arabidopsis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  15-JUL-1998 (Rel. 36, Created)
15-DEC-1998 (Rel. 37, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
28-FEB-2003 (Rel. 41, Last annotation update)
PPI/PPA phosphatases pleiotropic regulator PRL2.
PRL2 OR AT3G16650 OR MGL6.11.
Arabidopsis thaliana (Mouse-ear cress)
Eukaryota, Viridiplantae, Streptophyta, Embryophyta; Tracheophyta;
Bukaryota, Magnoliophyta; eudicotyledons; core eudicots; Rosid eurosids II; Brassicales; Brassicaceae, Arabidopsis.
                                                                                                                                                                                                                     STRAIN=cv. Columbia;
Shinozaki K., Davis R.W., Ecker J.R., Theologis A.;
Shinozaki K., Davis F.W., Ecker J.R., Theologis A.;
WRIKEN Arabidopsis full length cDNA clones (RAFLs) sequenced by the
SSP consortium (Salk/Stanford/PGEC).";
Submitted (AUG-2001) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: PLEIOTROPIC REGULATOR OF PP1 AND PP2A PHOSPHATASES.
-!- SIMILARITY: Contains 7 WD repeats.
-!- SIMILARITY: BELONGS TO THE PRLI/PRL2 FAMILY OF WD-REPEAT PROTEINS.
-!- CAUTION: Ref.2 sequence differs from that shown due to erroneous
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRL2 ARATH STANDARD Q39190; Q940Q7; Q9LUR9; 15-JUL-1998 (Rel. 36, C
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EMBL;
EMBL;
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                                                                             the European Bioinformatics Institute. There are no rest
use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by ar
entities requires a license agreement (See http://www.isb-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                DNA Res. 7:131-135(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sato
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=20277480;
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                                                               send
                                                                                                                                                                                                 gene model prediction.

CAUTION: It is uncertain whether Met-1 or Met-3
                                                                                                                                               SWISS-PROT entry is copyright. It is produced through a ceen the Swiss Institute of Bioinformatics and the EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S., Nakamura
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X82826; CAA58033.1; -. AB022217; BAB02756.1; AY054181; AAL06842.1;
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Nakamura Y., Kaneko T., Katoh T., Asamizu E., Tabata S.;
Nakamura Y., Kaneko T., Katoh T., Asamizu E., Tabata S.;
ral analysis of Arabidopsis thaliana chromosome 3. I. Seq
of the regions of 4,504,864 bp covered by sixty P1 and T.
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                                                                 g a license agreement (S
to license@isb-sib.ch).
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ALT_SEQ.
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MAGNESIUM (POTENTIAL).
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MAGNESIUM (POTENTIAL).
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                                                                                 (See http://www.isb-sib.ch/announce/
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Best Local
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16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
16-OCT-2001 (Rel. 40, Last annotation update)
16-OCT-2001 (Rel. 40, Last annotation update)
Adenain (EC 3.4.22.39) (Endoprotease) (Late L3 23 kDa protein).
Avian adenovirus type 8 (etrain ATCC A-2A) (Fowl adenovirus 8).
Viruses; dsDNA viruses, no RNA stage; Adenoviridae; Aviadenovirus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADEG8
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PROSITE;
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ProDom; PD000018; WD40; 2.
SMART; SM00320; WD40; 7.
                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                 "The DNA sequence of fowl adenovirus 8.";

Submitted (NOV-1999) to the EMBL/GenBark/DBU databases.

-I- FUNCTION: THIOL PROTEASE CLEAVING SPECIFIC GLY-ALA PEPTIDES IN A
-I- FUNCTION: THIOL PROTEASE CLEAVING SPECIFIC GLY-ALA PEPTIDES IN A
-INMBER OF VIRAL PRECURSOR PROTEINS (TERMINAL, IIIA, VI, VII, VIII,

IIA AND MU) WHICH ARE REQUIRED FOR VIRLON MATURATION. ALSO CLEAVES
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REPEAT
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                                                                                                                                                                                  entities requires a license agreement (S or send an email to license@isb-sib.ch).
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                                                                                                                                        EMBL; AF083975; AAD50345.2; -. HSSP; P03252; 1AVP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=66295;
                                                                    Pfam; PF00770; Peptidase_C5; 1
PRINTS; PR00703; ADVENDOPTASE.
ProDom; PD003705; Peptidase_C5
                                                                                                                           MEROPS; C05.001;
                                                                                                            InterPro; IPR000855;
                                                                                                                                                                                                                                                                                                 SIMILARITY: BELONGS TO PEPTIDASE FAMILY C5
                                                                                                                                                                                                                                                                                                                          HOST CELLS CYTOSKELETAL KERATINS K7 AND K18.
CATALYTIC ACTIVITY: Cleaves proteins of the adenovirus and its host cell at two consensus sites: -Yaa-Xaa-Gly-Gly-|-Xaa- and -Yaa-Xaa-Gly-Xaa-|-Gly- (in which Yaa is Met, Ile or Leu, and)
                                                                                                                                                                                                                                                                                                                 is any amino acid)
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PS50082; WD_REPEATS_2;
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             0003705; Peptidase_C5; 1.
Thiol protease; Late protein.
55 55 BY SIMILARITY.
72 72 BY SIMILARITY.
122 122 BY SIMILARITY.
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                                                                                                          Peptidase_C5.
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Pred. No.
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Hydrolase;
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RESULT
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                                                                                                                                                                                                                                                                                      RA Simpson A.J.G., Reinach F.C., Arruda P., Abreu F.A., Acencio M., Raingson A.J.G., Reinach F.C., Arruda P., Abreu F.A., Acencio M., RA Alvarenga R., Alves L.M.C., Araya J.E., Baia G.S., Baptista C.S., RA Barros M.H., Bonaccorsi E.D., Bordin S., Bove J.M., Briones M.R.S., RA Barros M.H., Bonaccorsi E.D., Bordin S., Bove J.M., Briones M.R.S., RA Bueno M.R.P., Colambo C., Costa F.F., Costa M.C.R., Costa-Neto C.M., Rainon M.R.B., Colombo C., Costa F.F., Costa M.C.R., Costa-Neto C.M., RA Coutinho L.L., Cristofani M., Dias-Neto E., Costa-Neto C.M., RA Facincani A.P., Ferreira A.J.S., Ferreira V.C.A., Ferro J.A., RA Facincani A.P., Ferreira M.J.S., Gomes S.L., Gruber A., RA Fraga J.S., Franca S.C., Franco M.C., Frohme M., Furlan L.R., RA Krieger J.E., Kuramae E.E., Laigret F., Lambais M.R., Leite L.C.C., RA Marques M.V., Martins B.A.L., Madeira H.M.F., Marsino C.L., Marchado M.A., Madeira A.M.B.N., Madeira H.M.F., Matsukuma A.Y., Menck G.F.M., Nayaki G.Y., Monteiro-Vitorello C.B., RA Moon D.H., Nagai M.A., Nascimento A.L.T. O., Netto L.E.S., de Oliveira M.G., de Oliveira R.C., Palmieri D.A., Paris A., Peixoto B.R., Roberto P.G., Rodrigues V., de Rosa A.J.M., A de Souza A.P., Terenzi M.F., Truffi D.A., Paris A., de Solveira J.F., Silvestri M.L.Z., Siqueira W.J., de Souza A.A., A de Solveira J.F., Silvestri M.L.Z., Siqueira W.J., de Souza A.A., Salveira J.F., Silvestri M.L.Z., Siqueira W.J., de Souza A.A., Mallada H., Van Sllvys M.A., Verjovski-Almeida S., Vettore A.L., Mature 406:151-159(2000)
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Best Local
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16-OCT-2001
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Proteobacteria;
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16-0CT-2001
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                                                                                                                use by non-profit institutions as long modified and this statement is not removed entities requires a license agreement (See
                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN the European Bioinformatics Institute. There are no restr
                                                                                                                                                                                                                              Nature 406:151-159(2000).

-!- FUNCTION: NOT KNOWN; PROBABLY INVOLVED IN PHOSPHATE TRANSPORT AND/OR METABOLISM (BY SIMILARITY).

-!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).

-!- SIMILARITY: BELONGS TO THE PHOU FAMILY.
                                                     EMBL; AE004029;
PIR; E82593; E8;
                                                                                                                                                               between the Swiss Institute of Bioinf
the European Bioinformatics Institute
   Phosphate
                    InterPro; IPR002754;
Pfam; PF01895; PhoU;
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(Rel. 40,
(Rel. 40,
                                                                                                   email to license@isb-sib.ch).
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Best Local S
Matches 6
RX MEDLINE-Borkeley;
RX MEDLINE-Borkeley;
RA Adams M.D., Celniker S.E., Holt R.A., Evans C.A., Gocayne J.D.,
RA Adams M.D., Celniker S.E., Li P.W., Hoskins R.A., Galle R.F.,
RA Adams M.D., Celniker S.E., Li P.W., Hoskins R.A., Galle R.F.,
RA Adams M.D., Celniker S.E., Li P.W., Hoskins R.A., Galle R.F.,
RA Adams M.D., Scherer S.E., Li P.W., Hoskins R.A., Galle R.F.,
RA Amanatides P.G., Scherer S.E., Li P.W., Hoskins R.A., Galle R.F.,
RA George R.A., Lewis S.E., Richards S., Ashburner M., Henderson S.N.,
RA George R.A., Lewis S.E., Richards S., Champq Q., Chen L.X.,
RA George R.A., Lewis S.E., Richards S., Champq Q., Chen L.X.,
RA George R.A., Lewis S.E., Randell M.D., Zhampq Q., Chen L.X.,
RA Brandon R.C., Rogers Y.-H.C., Blazej R.G., Champe M., Pfeiffer B.D.,
RA Abril J.F., Agbayani A., An H.-J., Andrews-pfannkoch C., Baldwin D.,
RA Abril J.F., Agbayani A., An H.-J., Andrews-pfannkoch C., Baldwin D.,
RA Ballew R.M., Basu A., Baxendale J., Bayraktaroglu L., Beasley E.M.,
RA Beeson K.Y., Benos P.V., Berman B.P., Bhandari D., Bolishakov S.,
RA Borkova D., Botchan M.R., Bouck J., Brokstein P., Brottier P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Dodson K., Doup L.E., Downes M., Dugan-Rocha S., Dunkov B.C., Dunn P.,
RA Gelode A., Gony E., Jownes M., Dugan-Rocha S., Dunkov B.C., Dunn P.,
RA Harris N.L., Harvey D., Heiman T.J., Hernandez J.R., Houck J.,
RA Harris N.L., Harvey D., Heiman T.J., Wei M.-H., Ibeymam C.,
RA Kimmel B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z.,
RA Meinel B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z.,
RA Merkulov G., Milshina N.V., Mobarry C., Morris J., Moshrefi A.,
RA Merkulov G., Milshina N.V., Mobarry C., Morris J., Moshrefi A.,
RA Reinert K., Remington K., Saunders R.D.C., Scheeler F., Shen H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Drosophila melanogaster (Fruit fly).
Bukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
Ephydroidea; Drosophilidae; Drosophila.
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"A recA-like gene in Drosophila melanogaster that is expressed high levels in female but not male meiotic tissues.";
Chromosoma 104:479-488(1996).
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Matches 8; Conser
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-i- FUNCTION: BINDS TO SINGLE AND DOUBLE STRANDED DNA AND EXHIBITS DNA, DEPENDENT ATPASE ACTIVITY. UNDERWINDS DUPLEX DNA (BY
                                                                                                                                                                                                                                                                                                                                                                                                                      NOS LYMST
O61309;
30-MAY-2000
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EMBL; D17726; BAA04580.1; --
EMBL; D41722; AAA64873.1; --
EMBL; AE003772; AAE57005.1;
HSSP; Q06609; 1B22.
                                                                                                                                                                          Eukaryota; Metazoa;
Lymnaeoidea; Lymnaei
NCBI_TaxID=6523;
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Nitric-oxide
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NP_BIND 124 131 ATP (POTENTIAL)
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SMART; SM00278; HhH1; 1.
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                             O' Shea
                                              Korneev S.A., Piper M.R.,
                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                              30-MAY-2000
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                                                                                 MEDLINE=98211896; PubMed=9552167;
                                                                                                                                                                                                                                                              Lymnaea stagnalis (Great
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IPR003593; AAA ATPase.
IPR000445; HhH.
IPR003583; HHH 1.
IPR001553; RecA.
                                                                                                                                                                                                                                                                                                                                       0 (Rel. 39, Created)
0 (Rel. 39, Last segu)
3 (Rel. 42, Last anno)
1e synthase (EC 1.14.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               336 AA; 36647 MW;
        characterization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                           Lymnaeidae; Lymnaea.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STANDARD;
                                                                                                                                    (ISOFORMS LONG AND
                                                                                                                                                                                                                                      Mollusca;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                39.3%;
                                                                                                                                                                                                                                                                                                                                          Last sequence update)
Last annotation update)
(EC 1.14.13.39) (NOS, t
                                                                                                                                                                                                                                      pond snail).
usca; Gastropoda; Pulmonata; Basommatophora;
                                                           Picot J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          THE RECA FAMILY. RAD51 SUBFAMILY.
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        of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 42; DB 1;
Pred. No. 15;
5; Mismatches
        NOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               F9E9B21405B15DB0 CRC64;
        in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1153
                                                        Phillips R.,
        a mollusc:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (See http://www.isb-sib.ch/announce/
                                                                                                                                    SHORT)
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                                                                                                                                                                                                                                                                                                                                          type I) (Neuronal NOS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 336;
        expression in
                                                           Korneeva
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL outstation
                                                           Ξ.I.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0,
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Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            modulatory neuron.";

J. Neurobiol. 35:65-76(1998).

-!- FUNCTION: PRODUCES NITRIC OXIDE (NO) WHICH
                                                                                                                                                                                                                                                                                                                                                                                  Pfam, PF00667; FAD binding 1; 1.
Pfam; PF00258; flavodoxin; 1.
Pfam; PF00175; NAD binding 1; 2.
Pfam; PF02898; NO synthase; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                      InterPro; IPR003097; FAD binding.
InterPro; IPR001094; Flavdoxin like.
InterPro; IPR001205; Flavdoxin.
InterPro; IPR001709; FPN cyt redetse.
InterPro; IPR004030; NO Synthase.
InterPro; IPR004030; NO Synthase.
InterPro; IPR001433; Oxred FAD/NAD(P)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WITH DIVERSE FUNCTIONS THROUGHOUT THE BODY -!- CATALYTIC ACTIVITY: L-arginine + N NADPH +
                                                                                                                                                                                                                                                        METAL
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HSSP; P29477; 1DD7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIR; T31080;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -
                                                                                                              SEQUENCE
                                                                                                                                           VARSPLIC
                                                                                                                                                                                                                                                                                                                                                       PRINTS; PR00369; FLAVODOXIN PRINTS; PR00371; FPNCR.
                                                                                                                                                                                                                                                                                                               Oxidoreductase;
                                                                                                                                                                                                                                                                                                                             PROSITE; PS50902; FLAVODOXIN_LIKE; PROSITE; PS60001; NOS; 1.
                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                  lternative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IsoId=061309-2; Sequence=VSP 003584;
TISSUE SPECIFICITY: EXCRESSED IN THE CENTRAL NERVOUS SYSTEM, IN
THE SEROTONERGIC CEREBRAL GIANT CELLS. BOTH THE LONG AND SHORT
ISOFORMS ARE EXPRESSED EQUALLY IN THE CNS.
SIMILARITY: BELONGS TO THE NOS FAMILY.
SIMILARITY: Contains 1 flavodoxin-like domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         nitric oxide + N NADP(+). COFACTOR: HEME. BINDS ONE MOLE EACH OF FAD AND FMN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ENZYME REGULATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Event=Alternative splicing; Named isoforms=2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ALTERNATIVE PRODUCTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SIMILARITY)
  667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AF012531; AAC17487.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IsoId=061309-1; Sequence=Displayed;
                                                       Similarity
8; Conserv
                          MANYIFIRAHDSEVQTVIAKI
 LAERIQLQAKDSDQQTILIKL
                                                                                                                                                                     * splicing. 610
427 610
82 82
397 417
556 587
697 708
836 846
911 929
1089 1104
                                                                                                                 1153 AA;
                                                        Conservative
                                                                                                                                           276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             T31080.
                                                                                                                                                                                                                                                                                                                 NADP; FAD;
                                                                                                                 129085
                                                                     39.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STIMULATED BY CALCIUM/CALMODULIN.
                                                                                                                 , ww
                                                                                                                                                                                                                                                                                                                  FMN; Calmodulin-binding; Heme;
                                                                     Score
Pred.
                                                                                                                                                                        NADP
                                                                                                                                                                                                    FAD (
                                                                                                               Missing (in isoform Short).
/FTId=VSP_003584.
fW; 101B77D02B66B109 CRC64;
                                                                                                                                                                                                                                                          IRON (HEME AXIAL LIGAND) CALMODULIN-BINDING (POTE
                                                                                                                                                                                                                                                                                      FLAVODOXIN-LIKE.
                                                                                                                                                          [IM] -P-S-C.
                             21
                                                          Mismatches
                                                                                                                                                                                     MODULIN-BINDING (POTENTIAL).

(PYRIMIDINE PART) (BY SIMILARITY)

(ADP PART) (BY SIMILARITY).

(PLAVIN PART) (BY SIMILARITY).

P (RIBOSE PART) (BY SIMILARITY).

P (ADP PART) (BY SIMILARITY).
                                                                       42;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (See
                                                                        DB 1;
57;
                                                                                                                                                                        PART) (BY SIMII TANDEM REPEATS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      . Usage by and for commercial http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ( IS A MESSENGER MOLECULE (BY SIMILARITY).

M O(2) = citrulline +
                                                           6.
                                                                                    Length 1153;
                                                           Indels
                                                                                                                                                                           OF E-[NT]-[ST]
                                                                                                                                                                                                                                                                         (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (BY
                                                                                                                                                                                                                                                                                                                  Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a collaboration
                                                           0
                                                           Gaps
                                                             0;
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RESULT 14 KPYA_RICCO

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) KPYA RICCO

O43117; Q43118;

1 01-NOV-1997 (Rel. 35, Created)

T 01-NOV-1997 (Rel. 35, Last sequence update)

T 01-NOV-1997 (Rel. 41, Last annotation update)

P 28-PEB-2003 (Rel. 41, Last annotation update)

P 29-YVVATE kinase isozyme A, chloroplast precursor (EC 2.7)

E Pyruvate kinase isozyme A, chloroplast precursor (EC 2.7)

S Ricinus communis (Castor bean).

SE Ricinus communis (Castor bean).

C Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tra

C Spermatophyta; Magnoliophyta; eudicotyledons; core eudic

C eurosids I; Malpighiales; Euphorbiaceae; Ricinus.
, છુ
                                       Query Match
Best Local Similarity
Matches 10; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. (ISOFORMS ALPHA AND BETA), AND SEQUENCE OF 75-STRAIN-cv. Baker 296; TISSUE-Endosperm; Blakeley S.D., Plaxton W.C., Dennis D.T.; "Relationship between the subunits of leucoplast pyruvate kinase
                                                                                                                                                                                                                                CHAIN
ACT SITE
METAL
                                                                                                                                                                                                                                                                                                                                InterPro; IPR001697; Pyruvate_kinase.
Pfam; PF00224; PK; 1.
Pfam; PF02887; PK_C; 1.
PRINTS; PR01050; PYRUVTKNASE.
PRODOm; PD001009; Pyruvate_kinase; 1.
TIGRFAMS; TIGR01064; pyruv_kin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                     PIR; T10051; T10051.
PIR; T10054; T10054.
HSSP; P14178; 1E0T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          modified and this statement is not removed. entities requires a license agreement (See
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Plant Physiol. 96:1283-1288(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sources.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ricinus communis and a comparison with the
                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; M64736; AAA33870.1; -. EMBL; M64737; AAAA33871.1; -.
                                                                                                                                                                                                                  METAL
                                                                                                                                                                                                                                                                                                           PROSITE; PS00110; PYRUVATE_KINASE; 1
Pyruvate: Transferrer "'
                                                                                                                                                                                                                                                                            TRANSIT
                                                                                                                                                                                                                                                                                                       Pyruvate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PATHWAY: Glycolysis; final step.
SUBUNIT: OLIGOMER OF ALPHA AND BETA SUBUNITS
SUBCELLULAR LOCATION: Chloroplast.
ALTERNATIVE PRODUCTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CATALYTIC ACTIVITY: ATP + pyruvate = ADP + COFACTOR: REQUIRES MAGNESIUM AND POTASSIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      European Bioinformatics Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SIMILARITY: BELONGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Event=Alternative splicing; Named isoforms=2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SWISS-PROT entry is copyright. It is produced through sen the Swiss Institute of Bioinformatics and the E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IsoId=Q43117-1; Sequence=Displayed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 [sold=Q43117-2;
                                                                                                                                                                                                                                                                              peptide; Alternative splicing.
74 CHLOROPLAST
                MANYIFIRAHDSEVQTVIAKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          non-profit institutions as long
                                                                                                                                                                                                                                                                                                      Transferase; Kinase; Glycolysis; Magnesium; Chloroplast;
                                                                                                   583
                                                                                                                                                                                          333
333
354
355
1
                                          Conservative
                                                                                                   AΑ;
                                                                                                                                                                                        583
331
333
354
129
                                                                                                   64093 MW;
                                                      38.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence=VSP_002886;
GS TO THE PYRUVATE KI
                                          ა
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                                                                                                                                             MAGNESIUM (POTENTIAL).

MAGNESIUM (POTENTIAL).

MSQSLHFSPNLTFAKQPFPKLPLPFPTSNSRYPVNNYKSLS

IKASTSPSSSSDPQULVADNOTGNSGYLYNNNNKSVTYSDP

SSIEVDAVTETELKENGFRSTRRTKLVCTIGPATCGFEELE

ALAVGG -- MAVVVKDLEEAVRVVVLAVLRDMEVVVVLVT
                                                        Score 41.5;
Pred. No. 3:
                                                                                                   AVMGVVGD (in isoform Beta).
/FTId=VSP_002886.
5DFDE4F778A753C2 CRC64;
                                                                                                                                                                                                                                   MAGNESIUM (POTENTIAL).
                                                                                                                                                                                                                                                 BY SIMILARITY
                                                                                                                                                                                                                                                              PYRUVATE KINASE
                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         There are no rest
ong as its content
oved. Usage by ar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KINASE FAMILY.
                                                                         DB
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                                                                       Length 583;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          from other
                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            eudicots;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Tracheophyta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.7.1.40).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a collaboration
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                                             Gaps
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RESULT 15
RRASULT 15
RRASULT 15
RRASULT 15
RAC 074803
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 15-SEP
DT UV exa
GN RHP233
OC SChizco
OC SChizco
OC SChizco
OC SCHIZCO
OC NCEL TI
RN [1]
RN [2]
R
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                                                                                                                                                                                                                                                                                                                                                                                                                                                     RXK MEDLINE-21848401; PubMed=11859360;
RA MEDLINE-21848401; PubMed=11859360;
RA Sgouros J., Peat N., Hayles J., Basham D., Bowman S.,
RA Sgouros J., Peat N., Hayles J., Basham D., Bowman S.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
RA Gentles S., Goble A., Hamilin N., Harris D., Hidalgo J., Hodgson G.,
RA Gentles S., Goble A., Hamilin N., Harris D., Hidalgo J., Hodgson G.,
RA Gentles S., Goble A., Hamilin N., Harris D., Hidalgo J., Hodgson G.,
RA Gentles S., Goble A., Hamilin N., Harris D., Hidalgo J., Hodgson G.,
RA Gentles S., Goble A., Hamilin N., Harris D., Hidalgo J., Hodgson G.,
RA Gentles S., Goble A., Hamilin N., Harris D., Hibett D., Odell C.,
RA James K., Jones M., Leather S., McDenald S., McLean J.,
RA James K., Jones M., Leather S., McDenald S., McLean J.,
RA Ratherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Rutherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Ratherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Woodward J., Volckaert G., Aert R., Robben J., Grymonprez B.,
RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Mueller-Auer S.,
RA Gabel C., Fuchs M., Fritzc C., Holzer E., Moestl D., Hilbert H.,
RA Borzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,
RA Goffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Goffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Goffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Goffeau A., Cariado L., Jimenez J., Sanchez M., del Rey F., Benito J.,
RA Daga R.R., Cruzado L., Jimenez J., Sanchez M., del Rey F., Benito J.,
RA Dominguez A., Revuelta J.L., Moreno S., Armstrong J., Forsburg S.L.,
RA Shakovski G.V., Usery D., Barrell B.G., Murse P.;
"The genome sequence of Schizosaccharomyces pombe.";
RA Nature 415:871-880(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       human HHR23A and Saccharomyces cerevisiae RAD23 nucleotide excisionerpair genes, in cell cycle control and protein ubiquitination."; Nucleic Acids Res. 30:581-591(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Zhao Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=21648918; PubMed=11788722;
Elder R.T., Song X.-Q., Chen M., H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Schizosaccharomyces
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MEDLINE=20119127; PubMed=10652237;
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MEDLINB=20231779; PubMed=10768934;

MEDLINB=20231779; PubMed=10768934;

Pujiwara T., Hoshino T., Ooshima T., Sobue S., Hamada S.;

Pujiwara T., Hoshino T., Ooshima T., Sobue S., Hamada S.;

"purification, characterization, and molecular analysis of the encoding glucosyltransferase from Streptococcus oralis.";

encoding glucosyltransferase from Streptococcus oralis.";

Infect. Immun. 68:2475-2483 (2000).

EMBL; AB025228; BAA95201.1; -.

InterPro; IPR002479; CW binding.

InterPro; IPR002479; CW binding.

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Best Local S
Matches 19
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Q54178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Vickerman M.M., Sulavik M.C., Clewell D.B. "Molecular analysis of Streptococcus gordo phase variants.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-NOV-1996 (TrEMBLrel.
01-NOV-1996 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q9WXJ4;
Q9WXJ4;
01-NOV-1999
01-NOV-1999
01-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Streptococcus.
NCBI_TaxID=29390;
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01-NOV-1996 (Tr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            J. Bacteriol. 174:3577-3586(1992).
EMBL; U12643; AAC43483.1; -.
EMBL; M89776; AAA26969.1; -.
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gordonii Challis.";
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                                                Indee M., Fukui K., Miyagi A.;
"S. cricetus glucosyltransferase (gtfs and gtfT)
submitted (MAR-1999) to the EMBL/GenBank/DDBJ c
EMBL; AB026123; BAA77236.1; -
EMBL; AB026123; BAA77236.1; -
InterPro; IPR002479; CW binding.
InterPro; IPR002318; Glyco hydro_70.
Pfam; PF01473; CW binding_1; 10.
Pfam; PF02324; Glyco_hydro_70; 1.
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InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 18.
Pfam; PF02324; Glyco_hydro_70; 1.
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"Identification of a gene,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=92276337;
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                                                                                                                                                                                                                                                                                                                                               Plasmid pAM1.
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                       GTF-S.
                                                                                                                                                                                                                                      STRAIN-HS-6;
                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                             NCBI_TaxID=1333;
[1]
                                                                                                                                                                                                                                                                                                                            Streptococcus.
                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus criceti
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Tardif G., Clewell D.B.;
on of a gene, rgg, which regulates expression of
on of a gene, rgg, which regulates expression of
on of a gene, rgg, which regulates expression of
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90.5%;
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Last sequence update)
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Last annotation update)
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Q55265;
01-NOV-1996 (
01-NOV-1996 (
01-OCT-2002 (
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EMBL; 135928; AAC41413.1; -.
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Q8G9Q2;
Q1-MAR-2003
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SEQUENCE
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InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_i; 11.
Pfam; PF02324; Glyco_hydro_70; 1.
ProDom; PD153432; Csurface_antigen; 1.
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SIGNAL 1
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                      MEDLINE=22231661; PubMed=12270834; Bozonnet S., Dols-Lafargue M., Fabre Mondan P., Willemot R.M.; Wolecular characterisation of DSR-E, synthesising dextransucrase with two synthesising dextransucrase with two J. Bacteriol
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01-MAR-2003
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EMBL;
                                                                                                                                                                                                             SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                            Bacteria;
                                                                                                                                                                                                                                                                                                                                      Leuconostoc
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                                                                                                                                                                                                                                                                                                               Firmicutes;
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1577 AA;
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(TrEMBLrel. 22, Last annotation update)
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                                                                                                                                                                                                                                                                                                                                                                                                 Gremblrel. 23, (Tremblrel. 23, (Tremblrel. 23, (Tremblrel. 23, case (EC 2.4.1.5)
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                                                                                                                                                                                                                                                                                                                                      mesenteroides
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      CAD22883.
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٠.
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1; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
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                                                                    catalytic domains.";
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O68542;
O1-AUG-1998 (TrEMBLrel. 07, Create 01-AUG-1998 (TrEMBLrel. 07, Last s 01-OCT-2002 (TrEMBLrel. 22, Last a 01-OCT-2002 (TrEMBLrel. 22, Last a 01-OCT-2002 (TremBlrel)).
              SEQUENCE FROM N.A.

SEQUENCE FROM N.A.

MEDLINE=95122197; PubMed=7822030;

Simpson C.L.; Giffard P.M., Jacques N.A.;

Simpson C.L.; Giffard P.M., Jacques N.A.;

Streptococcus salivarius ATCC 25975 possesses at least two coding for primer-independent glucosyltransferases.";

coding for primer. independent glucosyltransferases.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Transferase.
NON TER 1:
SEQUENCE 1:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Streptococcus salivarius V1477 gtfN."; Submitted (FEB-1998) to the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Jaffe R.I.;
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  IPR003318; Glyco_hydro_70
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STRAIN=NRRL B-512F;
MEDLINES-20169623; PubMed=10705445;
Medlines-20169623; PubMed=10705445;
Funane K., Mizuno K., Takahara H., Koba
"Gene encoding a dextransucrase-like pr
mesenteroides NRRL B-512F.";
Biosci. Biotechnol. Biochem. 64:29-38(2
EMBL; AB020020; BAA90527.1; -.
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Q9LCJ7;
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NCBI_TaxID=1245;
                              glucosyltransferase from Leuconostoc mesentero Submitted (OCT-1999) to the EMBL/GenBank/DDBJ EMBL; AJ250172; CAB76565.1;
                                                                                                               Arguello-Morales M.A., Remaud-Simeon M., Pizzut S., Sarc Willemot R.M., Monsan P.; "Sequence analysis of the gene encoding alternansucrase,"
                                                                                                                                                                                                                                                                                                                                                                                                                       Dextransucrase
                                                                                                                                                                                                               SEQUENCE FROM N.A.
STRAIN=NRRL B-1355;
                                                                                                                                                                                                                                                                                                                                 Bacteria; Firmicutes;
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PF02324; Glyco_hydro_70; 1.
NCE 1016 AA; 110344 MW; 889
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         IPR002479;
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4; Mismatches
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STRAIN-NRTL B-1299;
Monchois V., Remaud-Simeon M., Monsan P.,
"Cloning and sequencing of a gene coding
dextransucrase (DSRB) from Leuconostoc me
synthesizing only a a(1-6) glucan.";
FEMS Microbiol. Lett. 0:0-0(1998).
EMBL, AF030129; AAB95433.1;
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 14.
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01-MAR-2001
01-OCT-2002
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"Leuconostoc mensenteroides B-742CB, a dextransucrase submitted (AUG-2000) to the EMBL/GenBank/DDBJ database.
EMBL, AF294469; AAG38021.1; -.
InterPro; IPR002479; CW binding.
InterPro; IPR002479; Cb binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW binding_I; 14.
Pfam; PF01473; CW binding_I; 14.
SEQUENCE 1508 AA; 168542 MW; E2FCFA0F87AE4F3A CRC64
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pfam; PF02224; Glyco_hydro_70; 1.
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Glycosyltransferase; Transferase.
SEQUENCE 1508 AA; 168511 MW;
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Plasmid pAM1.
Bacteria; Firmicutes;
SEQUENCE FROM N.A.
STRAIN=ATCC 25975;
MEDLINE=93381463; PubMed=8371114;
Giffard P.M., Allen D.M., Milward C.P., Simpson C.L.,
"Sequence of the gtfK gene of Streptococcus salivarium
evolution of the gtf genes of oral streptococci.";
J. Gen. Microbiol. 139:1511-1522(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "S. cricetus glucosyltransferase(gtfS and gtfT) submitted (MAR-1999) to the EMBL/GenBank/DDBJ emBL; AB026123; BAA77237.1;
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Pfam; PF01473; CW binding_1; 14.
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01-NOV-1996 (TYEMBLIFEL. 01, Last sequence update)
01-OCT-2002 (TYEMBLIFEL. 22, Last annotation update)
Glucosyltransferase S precursor (EC 2.4.1.5) (GTE
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NCBI_TaxID=1304;
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Best Local S
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Best Local (
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STRAIN-ATCC 25975;

MEDIINE-92148377; PubMed=1838391;

Giffard P.M., Simpson C.L., Milward C.P., Jacques N.A.;

Giffard P.M., Simpson C.L., Milward C.P., Jacques N.A.;

"Molecular characterization of a cluster of at least two
glucosyltransferase genes in Streptococcus salivarius ATCC 25975.";

J. Gen. Microbiol. 137:2577-2593 (1991).

J. Gen. Microbiol. 137:2577-2593 (1991).

PINOTION: PRODUCTION OF EXTRACELULAR GLUCANS, THAT ARE THOUGHT
PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAUSE
THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE
AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q9ZAR4;
Q9ZAR4;
01-MAY-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -!- SUBCELLULAR LOCATION: EXTRACELLULAR.
-!- DISEASE: DENTAL CARIES.
-!- SIMILARITY: TO REGIOUS OF BARLEY AND BACILLUS AMYLOLIQUEFACIENS
BALPHA AMYLASES AND RABBIT GLYCOGEN PHOSPHORYLASE.
EMBL; Z11872; CAA77898.1; --
EMBL; Z11872; CAA77901.1; --
EMBL; M64111; AAA26897.1; --
EMBL; M64111; AAA26897.1; --
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PE01473; CW_binding_1; 14.
Pfam; PE01473; CW_binding_1; 14.
Pfam; PE01473; CW_binding_1; 14.
Transferase; Glycoshydro_70; 1.
Transferase; Glycoshydro_70; 1.
Transferase; Glycoshydro_70; 1.
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                                                                                                                                                                                                                                  EMBL: U81374; AAD10952.1; ...
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco hydro 70.
Pfam; PF01473; CW_binding_1; 16.
Pfam; PF02324; Glyco hydro 70; 1.
SEQUENCE 1527 AA; 169709 MW; 1DF
                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN-NRRL B-512-F;
Bhathagar R., Singh D.K.S.;
Bhathagar Robuston of Dextransucrase Gene from "Cloning and Molecular Characterization of Dextransucrase Gene from Leuconostoc mesenteroides NRRL B-512F.";
Submitted (DEC-1996) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-MAY-1999
01-OCT-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=1245;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacteria;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Leuconostoc mesenteroides.
Bacteria, Firmicutes, Lactobacillales, Leuconostoc
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654
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NYSFVRAHDSEVOTVIAQIV 673
                                                     NYIFIRAHDSEVQTVIAKII 22
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1599 AA;
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9 (TrEMBLrel. 10,
2 (TrEMBLrel. 22,
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81.0%;
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                                                                                                                    80.4%; Score 86; DB
80.0%; Pred. No. 1.70
tive 3; Mismatches
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Last sequence update)
Last annotation update)
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Pred. No. 1.2e-05;
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WW; 24B77869E152B707 C
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RESULT 15
Q8KRE
ID Q8KRE
AC Q8KRE
AC Q8KRE
D7 01-00
D7 01-00
D7 01-M
D8RD
D8RD
D7 D9KRE
GN D8RD
D8 D8RD
COC Bacte
GN D8RD
COC NCBI
RN SEQUI
RA Neuble
RT Leucc
RT Submi
DR EMBL;
Theu
DR Intes
DR Intes
DR Pfam,
KW Tram
SQ SEQUI
SQC SEQUI
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01-OCT-2002 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
Dextransucrase DsrD (EC
                                                                                                                       Leuconostoc mesenteroides LCc4.";
Submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; ANO17384; AAG61158.1; -
InterPro; IPR002479; CW binding.
InterPro; IPR003318; Glyco_hydro_70.
pfam; pF01473; CW binding_1; 6.
Pfam; pF012324; Glyco_hydro_70; 1.
Transferase; Glycooyltransferase.
SEQUENCE 1527 AA; 169835 MW; F9D0DE220BD89668 CRC64;
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Bacteria; Firmicutes; Lactobacillales;
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                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=1245
                                                                                                                                                                                                                                                      Newbauer H., Bauche A., Mollet B.;
"Isolation and characterization of the incompator mesenteroides Lcc4.";
654 NYSFVRAHDSEVOTVIAQIV
                                                              16;
                                 3 NYIFIRAHDSEVQTVIAKII 22
                                                                               Similarity
                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                             80.4%;
                                                                                                                                                                                                                                                                                                                                                                                       22, Created)
22, Last sequence update)
23, Last annotation update)
2.4.1.5).

 Mismatches

                                                                               Score 86;
Pred. No.
      673
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                                                                               DB 2; 1
1.7e-05;
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Search completed: November 13, 2003, 09:44:09 Job time : 35.1564 secs

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